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A.M.A. SESSION—San Francisco—JUNE 13-17, 1938

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PREVENTIVE AND INDUSTRIAL MEDICINE AND PUBLIC HEALTH

NEXT STEPS IN ORGANIZATION AND ADMINISTRATION

CHAIRMAN'S ADDRESS

LEVERETT D. BRISTOL, M.D., DR.P.H.
Health Director, American Telephone and Telegraph Company
NEW YORK

Custom and precedent make it possible for the chairman of a section of the American Medical Association to develop his address either from the strictly scientific or from the more philosophic point of view. In choosing the latter course one may assume the rôle of a historian, describing past or recent trends; a reporter, recording present status; or an amateur prophet, dealing with next steps. In spite of the hazards of attempting to chart the unknown medical "seas" of the future, thirty years' experience, including private practice, the teaching of preventive medicine, the administration of state, county and local health work, and more recently the field of industrial hygiene, have made possible a few brief suggestions as to some of our immediate objectives in the further organization and administration of preventive and industrial medicine and public health.

PREVENTIVE MEDICINE

The dividing line between curative and preventive medicine in the future will be less and less evident; the so-called healing art will become decreasingly pathologic and increasingly physiologic; the clinician and the hygienist will take up arms together in a common cause wherein voluntary and state efforts are more adequately interlocked.

In the field of preventive medicine, the somewhat hesitant steps already taken in some communities to make the doctor's office a real health center and his private practice a focusing point for the modern application of preventive medicine should be strengthened into the firm, sure advance of a well organized program. In this connection there is great need for a community demonstration to bring out the amount and kind of preventive services that should and can be offered successfully by the physician as a part of his regular practice and to determine how best to "sell" the idea of the private practice of preventive medicine to the public so that the doctor's clientele in the future will demand from him and be willing to pay him not only for curative treatment but also for individual health protection and promotion. To this end it is suggested that, with the study, guidance and sponsorship of the American Medical Association and the possible financial participation of one of the philanthropic foundations, a county medical society demonstration be organized to carry on an active experiment of this nature for a period of five years, the selection of a county society for such a proposed demonstration to be based on (*a*) a careful, preliminary survey of all county societies that might be interested and (*b*) the cooperation of associated state and local official and voluntary medical and health societies and boards.

MEDICAL ECONOMICS

Such an organized program of preventive medicine and individual hygiene undoubtedly would point the way to the ultimate solution of the most important health problems of the present day; namely, those insidious scourges of advancing years—diseases of the heart, kidneys and blood vessels, cancer and various nervous and mental instabilities, to say nothing of the ever important communicable diseases. At the same time, such a county medical society demonstration might be so organized as to help answer many questions with reference to the economics of medical care and the responsibility of the public for those unable to provide the medical care they need out of their own resources. The organized medical profession should assume the leadership in the development of a health and medical program which will satisfy the needs and demands of the general public, from the broad aspects of modern sociology and economics.

If majority and minority committee reports on the costs of medical care have been inevitable, how necessary and desirable it would seem to be for majority and minority experiments and demonstrations to be carried on in the field of medical economics! The next five years should be looked on as a period of active trial and critical evaluation of all reasonable plans in the interests of public security against sickness and the conservation of public health; in this connection, the American Medical Association should be prepared to defend its own position and beliefs through a well organized community demonstration, as suggested. Local medical and dental service bureaus for the adjustment and instalment settlement of bills and local associations for the provision of group prepayment of hospital bills are initial steps already taken in several communities toward the more complete coverage of those with smaller incomes who require preventive and curative medical services and more adequate economic security.

INDUSTRIAL MEDICINE

There are at least four steps that might be suggested as desirable in the future development of industrial medicine, and these may be presented briefly as follows:

1. Industrial medicine of the future must place more and more emphasis on prevention; we should think in terms of industrial health. The "company surgeon" undoubtedly will still have a function to perform, in

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view of accidental injuries and compensation problems, but "next steps" should involve the more active direction of industrial health programs by physicians well trained in health and preventive medicine, with the assistance of industrial engineers, psychologists, nurses, nutritionists and other personnel that may be required. Mere attention to occupational disease must give way to the active promotion of occupational health. Attention to the prevention of tuberculosis and syphilis and of various types of emotional maladjustment and actual mental disease must become as active in the industrial health program as in the public health program in general; and much of the same methods of control should be inaugurated in cooperation with community authorities.

2. In order to make available well trained industrial health leaders, an important step that must be taken is the better and more general teaching of this subject in our schools of medicine and public health. The growing importance of industrial health would seem to warrant the placing of this branch of instruction under its own independent development in schools of medicine and public health, through a separate department and professorship of industrial health. In a detailed survey I [1] found that only thirteen out of eighty-five medical and public health schools in the United States and Canada give separate courses in industrial hygiene. While a number of other schools assign one or two lectures to this subject in their course on preventive medicine, twenty-one schools apparently give no instruction whatever on industrial hygiene or industrial medicine. There also would seem to be a real need for a cooperative demonstration between local medical schools and industrial organizations in the newer fields of social hygiene and mental health, in order that suitable programs under expert medical guidance may be forthcoming for the benefit of the great mass of the working population.

3. Possibly the most needed step for the further development and administration of industrial health services is the putting into practice of a recently suggested plan [2] or method for the measurement or appraisal of industrial health and safety activities. A subcommittee on industrial health appraisal of the Committee on Administrative Practice of the American Public Health Association has solicited the wide use of a preliminary trial appraisal form by industrial organizations. As chairman of this subcommitte, I may state that we shall be glad to receive suggestions and recommendations from those who have any practical experience with this tentative form so that, on the basis of group experience, a revised, standardized and official form for the appraisal of industrial health activities may be adopted in the near future.

4. While an appraisal form for the survey and measurement of an industrial health program, as mentioned, will be of prime assistance to company management and personnel directors in the development and follow up of their health program, another step that is much needed is the inauguration of a plan by the American Medical Association whereby the quality and quantity of medical services performed in industrial medical departments may be surveyed, measured and possibly approved and certified. This would seem to be a logical field for the influence and guidance of the entire organized medical profession of the country, which represents, through its association, the work of the general practitioner and all the important specialties.

The rapidly increasing organization of bureaus of industrial hygiene in state and local departments of health during the past year, the passage of laws in several states providing workmen's compensation for certain occupational diseases, the need for defining the functions of health and labor departments as pertain to activities in this field, the questions as to the relative positions of the physician and the engineer in the industrial health program, the proper relationship between industrial medical departments and the private practice of medicine, the better balance between health and safety activities in industry, the problem of how best to furnish much needed industrial health and medical services to the vast number of small business concerns and the constant requirement of improved medical and surgical technic in industry would seem to call for continuous expert thought and advice on the part of the American Medical Association, analogous to that given to medical education and hospital administration in the United States. There is every reason to believe that the management of private industries and various other agencies, official and voluntary, might welcome the guidance of the American Medical Association in things medical, just as have public and private institutions of learning, hospitals and other organizations. The creation of a Council on Industrial Health by the American Medical Association would be a much needed forward step. Representatives of industrial management and labor groups might be invited to serve as consultants or advisers to such a council.

PUBLIC HEALTH

Just as each doctor's office should become a health center for the private practice of preventive medicine, so also his office should at least in part become a branch office of the local health department. Only in this way will the public health obstacles of the present and future be overcome. The control of pneumonia, syphilis, mental disease and various other disorders await the more active partnership of private doctor and public health officer. Not until the practicing physician assumes as much obligation and responsibility to the public as he does to his private patient will these problems, which are now pressing for solution, be solved. Moreover, it behooves the private practitioner to go at least half way toward the health department in a spirit of cooperation. In the interest of the better and more complete health and medical care of all the people, the gap in the organized care of the sick must further be closed; the best way to meet the need is for practicing physicians and health authorities to approach one another on the common ground of an active, coordinated program with the financial backing of the public, where necessary.

City health administration of the future must become more and more decentralized, with the possible development of neighborhood health districts and full-time district medical officers. Under suitable medical auspices and guidance the city health district plan already in operation in one or two localities could be followed to advantage in many of the large cities. Committees of coordination made up of private physicians and public and voluntary health representatives should be set up for purposes of advisory supervision. Not only

1. Bristol, L. D.: The Teaching of Industrial Hygiene, J. A. M. A. **102**: 990 (March 31) 1934.

2. Bristol, L. D.: An Appraisal Form for Industrial Health Service, Am. J. Pub. Health **22**: 1263 (Dec.) 1932; Appraisal of Industrial Health Activities, Indust. Med. **2**: 85 (Aug.) 1933; Measuring the Industrial Safety Program, Personnel J. **13**: 193, 1934; Practical Application of an Industrial Health Appraisal Form, Am. J. Pub. Health **26**: 390 (April) 1936.

industrial health services, but local city health administration in general, should be closely integrated in the future with the curriculums and courses of local medical and public health schools, so that adequate training centers will be available for the education of prospective physicians and health leaders. Industrial medical departments and city health units should be the practical training and research grounds for the teaching of preventive and industrial medicine, just as are hospital wards for clinical or curative medicine.

While city health administrative units of the future should be contracted and increased in number, rural health units must be expanded and decreased in number. In this development (*a*) the state department of health, with federal financial assistance where necessary, should assume more authority, through state health districts or bureaus, over rural health administration; or (*b*) the county should be recognized as the smallest unit for rural health work, or (*c*) the town health union plan, wherein several small rural communities combine as a unit for health and hospital administration, should be endorsed, based on local conditions and needs. No one pattern for rural health administration seems practicable and feasible for all sections of the United States. The one thing which is evident, however, is that the small town, isolated, part-time, underfinanced local health department, without trained leadership, is entirely out of date, and in many communities there is urgent need for a new model. With available aid from Social Security funds and an increasing interest in rural affairs, the farmer of the future is bound to demand much more and better health protection than he has had in the past.

Whether or not public health degrees, based on special courses in public health, should become prerequisites for appointment to public health positions of leadership is a question that must receive careful consideration in the future. There would seem to be little logic in maintaining highly organized and endowed schools of public health for the granting of such degrees if they are not to be required of specialists in this field.

When better federal, state, local, industrial, collegiate and voluntary health services are built for the benefit of the people of the United States, let us hope that the American medical profession and its representative Association will have a large part in building them.

195 Broadway.

ABSTRACT OF DISCUSSION

DR. HOLMAN TAYLOR, Fort Worth, Texas: I am delighted to be able to make the report which the chairman requested. The House of Delegates yesterday unanimously approved the idea of a Council on Industrial Health, and the Board of Trustees agreed to set up such a council. The development of such a council will be along the lines of the other councils. I hadn't thought of it so directly before; Texas is not, in the strict sense, an industrial state, and yet there are many industries there. There are the oil industry, gas, and marble and granite quarries. Some time ago our health department established a bureau of industrial hygiene, and a very fine physician was placed in charge. He came to me as secretary of the state medical association for a discussion of his set-up. I asked him to work up his plan of procedure so we could see it, and perhaps prevent any unfortunate repercussions from the practicing physicians or from industry itself. The plan eventually evolved did that.

DR. STANLEY NICHOLS, Asbury Park, N. J.: It might interest this section to hear of the five year experience we have had in New Jersey with a modification of Dr. Vaughan's plan of organized medical participation. The Medical Society of New Jersey started, after the White House Conference on Child Health and Protection, five or six years ago, on this program. In developing a program of this sort, the state medical society and the state department of health must get together on common ground and build from that foundation. There have been many approaches to this problem, and some of the functions of the various components in such a public health participation are not yet clearly understood by the family physician. There are two things that a family physician must do: One is that, as an individual physician, he must furnish preventive medical care to all his private patients. That is the fundamental part of this program. Second, as a member of his county and state society and of the American Medical Association he must be ready to furnish medical service to all indigent and low wage groups needing medical service, on terms that are suitable to the organized profession. In New Jersey we are building on that basis and have had the cooperation of the state department of health. The fundamental plan that we have set up is that the doctor, the dentist, the nurse and the medical social worker are projected as the medical service part of a triangle. The second part consists of the official public authorities, whether they are the board of health or the board of education or other public authorities. The third part, and the part that can best "sell" this plan, consists of the lay health agencies, with whom in the past the medical profession had no working relationship. Such a triangle of the administrative groups, the medical service groups and the "salesmen's" groups, the lay agencies, can together do any needed piece of public health work. We have developed, with the help of Social Security funds, our New Jersey plan to preserve the private practice of medicine and to furnish the needed medical service, working together with the public authorities, for the large indigent and low wage group which cannot be carried by the private practitioner any further without assistance. By using Social Security funds, through the close cooperation of our state department of health, we are training our individual doctors both by didactic literature and courses and by using baby health stations, maternal welfare clinics, and tuberculosis and venereal disease clinics as training centers for the practice of preventive medicine by each physician.

LYMPHOCYTIC CHORIOMENINGITIS

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In 1936 Scott and Rivers [1] reported two cases of meningitis in man caused by a filtrable virus. The etiologic agent was isolated from the spinal fluids of the patients. The authors pointed out that their serums possessed neutralizing antibodies for at least 100 lethal doses of the virus from nine to eleven weeks after the clinical onset of the disease.

It is the purpose of this paper to report in detail three cases of acute lymphocytic meningitis. Serum taken from the first two patients in this series contained neutralizing antibodies for the virus of lymphocytic choriomeningitis. Serum from the third patient and from a control did not contain such antibodies.

The method employed in proving the presence of the antibodies was in part described by Rivers and Scott [2] in 1936. It has been modified by Rivers recently and is briefly as follows:

A 10 per cent emulsion of a guinea-pig brain infected with lymphocytic choriomeningitis virus but free from ordinary bacteria is prepared with a diluent of Locke's solution and then centrifugated at full speed for from fifteen to twenty minutes. Serial tenfold dilutions of the supernatant fluid are made with the same diluent, the highest dilution being 10^{-2};

From the Medical Service A, the Pennsylvania Hospital.
Dr. Thomas M. Rivers and his staff cooperated in this study.

1. Scott, T. F. McN., and Rivers, T. M.: Meningitis in Man Caused by a Filtrable Virus: I. Two Cases and the Method of Obtaining Virus from Spinal Fluids, J. Exper. Med. **63**: 397-414 (March 1) 1936.
2. Rivers, T. M., and Scott, T. F. McN.: Meningitis in Man Caused by a Filtrable Virus: II. Identification of the Etiologic Agent, J. Exper. Med. **63**: 415-432 (March) 1936.

0.25 cc. of each dilution of virus, ranging from 10^{-1} to 10^{-3}, were mixed with an equal amount of each sample of serum under investigation and allowed to stand at room temperature for five or six hours. All neutralization tests are done with this particular strain of virus in the dilution of 10^{-2}, which is mixed with the various serums to be tested and with known normal serum and homologous immune serum as negative and positive controls. The dilution of the virus is determined on a statistical basis and applied to one particular strain of virus. After suitable incubation, each mixture is inoculated into four guinea-pigs, and survival of the four or of three of the four for eighteen days is considered a positive result and the death of the four or of three of the four within that time a negative result.

In the cases reported the serum of the patients was taken for determination of the neutralization reaction approximately forty-three, forty-seven and forty-four days, respectively, after the onset of the disease.

CASE 1.—*History.*—C. P., a 14 year old white school girl, who was perfectly well before October 9, 1936, had on that day dizziness, a slight headache (which became worse and confined to the frontal region), generalized muscular pains and stubborn constipation. She went to school but was so dizzy that she was brought home. She remained in bed until her admission to the Pennsylvania Hospital on October 16, approximately the seventh day of the disease. No other members of her family were ill.

Examination.—On admission, the temperature (by mouth) was 102.3 F., the pulse rate 116, the respiratory rate 24 and the blood pressure 104 systolic and 80 diastolic. The patient was ill and cranky, complaining bitterly of frontal headache. She held her eyelids nearly closed, and the conjuntivae were red; her neck was painful to move but not stiff. The heart, lungs and abdomen were considered normal. The muscles of her legs and arms were painful to moderate finger pressure and painful to move. The neurologic examination gave essentially negative results; there was no Kernig's sign or Brudzinski's sign.

Course.—The temperature went to 104 F. and then maintained a course from 104 to 99 F. for three days, gradually returning to normal on the twenty-first day of the disease. Headache persisted during this time. Anorexia and constipation were present but improved after the second week. The patient was discharged from the hospital on the thirty-sixth day of the disease, apparently well.

A roentgenogram of the chest showed no evidence of tuberculosis. On October 10 there were 11,300 white cells per cubic millimeter, and a differential count showed polymorphonuclears

TABLE 1.—*Data on the Cerebrospinal Fluid in Case 1*

Day of Disease	Date	Cells	Differential Count	Initial Pressure, Cm. of Water	Chlorides, Mg. per 100 Cc.	Sugar, Mg. per 100 Cc.
10th	10/19/36	300	All lymphocytes	200	55	688
11th	10/20/36	300	All lymphocytes	150	58	702
14th	10/23/36	60	All lymphocytes	120	49	702
18th	10/27/36	90	96% lymphocytes	150	52	716
21st	10/30/36	35	All lymphocytes	150	52	734
28th	11/ 8/36	30	All lymphocytes	150	..	...
114th	1/31/37	5	All lymphocytes	160	..	...

10/20/36—colloidal gold curve, 0000000000

52 per cent, basophils 3 per cent, lymphocytes 37 per cent, monocytes 1 per cent and Türk's cells 10 per cent. A blood culture on October 17 was negative. Three examinations of the urine and two cultures of the urine for typhoid bacillus had negative results. The Wassermann and Kahn reactions of the blood were negative. The Wassermann reaction of the cerebrospinal fluid was negative on October 20.

The patient was seen on the 114th day after the onset of the disease. She was symptom free, and the physical and neurologic examinations gave negative results. Serum taken on the forty-third day from the onset of the disease contained neutralizing antibodies for the virus of lymphocytic choriomeningitis.

CASE 2.—*History.*—M. T., a 19 year old single Polish girl, employed in a dress factory, was perfectly well until October 23, when frontal headache and dizziness developed. She continued to work that day, but the next two days she remained at home, the headache persisting. On the fourth day she returned to work. She was forced to bed on the sixth day, more headache, with vomiting and sore throat, having developed. Obstinate constipation was present, and she noticed some stiffness of the neck. She was admitted to the Pennsylvania Hospital on October 31, the eighth day of the disease. There was no family history of infection or illness.

Examination.—The temperature was 100 F., the pulse rate 80, the respiratory rate 24 and the blood pressure 100 systolic and 60 diastolic. On admission the patient was moderately ill and complained of stiff neck and photophobia. Her neck was stiff

TABLE 2.—*Data on the Cerebrospinal Fluid in Case 2*

Day of Disease	Date	Cells	Differential Count	Initial Pressure, Cm. of Water	Sugar, Mg. per 100 Cc.	Chlorides, Mg. per 100 Cc.
8	10/31/36	1,380	All lymphocytes	290	..	...
9	11/ 1/36	1,100	All lymphocytes	170	..	...
10	11/ 2/36	850	90% lymphocytes	...	..	...
11	11/ 3/36	800	90% lymphocytes	150	42	705
13	11/ 5/36	610	.....	110	45	709
18	11/10/36	180	98% lymphocytes	110	..	...
20	11/12/36	80	90% lymphocytes	160	..	...
29	11/21/36	40	All lymphocytes	130	..	...
99	1/30/37	4	All lymphocytes	130	..	...

10/31/36—colloidal gold curve, 0000000000
11/ 1/36—pellicle, acid-fast organisms (?)

to lateral motion and painful but not stiff to flexion. The eyes, heart, lungs and abdomen were normal. Neurologic examination gave essentially negative results except for a moderate Kernig's sign on the left. There was no Brudzinski's sign.

Course.—A spinal puncture was done on admission, and because of the presence of cloudy fluid with 1,380 cells per cubic millimeter (which were later believed to be lymphocytes), the patient was given intravenously 30,000 units of antimeningococcic antitoxin (Parke, Davis & Co.) in 100 cc. of saline solution. On the following day, because some doubt was maintained as to the correct diagnosis, an additional 20,000 units of antimeningococcic antitoxin was given. The patient had urticaria after the second dose of serum.

The symptoms cleared up in approximately five days after admission, the temperature was normal on the fourteenth day of the disease and there was a rise on the twenty-third day to 101 F. because of severe rhinopharyngitis. The patient was discharged as well on November 22, the thirtieth day of the disease.

Three examinations of the urine gave negative results. There were 11,100 white blood cells per cubic millimeter on November 2 and 10,000 on November 10. A differential count showed polymorphonuclears 73 per cent, eosinophils 1 per cent, lymphocytes 25 per cent and monocytes 1 per cent. The Wassermann and Kahn reactions of the blood were negative.

Three cerebrospinal fluid cultures were taken, on November 2, 3 and 4, and all were negative. The Wassermann reaction of the cerebrospinal fluid was negative on November 3. Because of the acid-fast organisms (four in all, seen on only one slide), observed on November 2, guinea-pigs were inoculated with the spinal fluid. The results were later reported negative. Spinal fluid sent to Dr. Rivers on the seventeenth day of the disease did not yield a virus. Serum sent to Dr. Rivers on the forty-seventh day of the disease was found to neutralize the virus of lymphocytic choriomeningitis.

This patient was seen on the ninety-ninth day after the onset of the disease. She had gained weight, and the physical and neurologic examinations gave negative results.

A friend of this patient, J. D., who had no history of illness at the same time or before the patient's illness, was thought to be a good control. He had been in close contact with her before and during the early part of her illness. His serum did not neutralize the virus of lymphocytic choriomeningitis.

CASE 3.—*History.*—C. M., a 24 year old white man, married, machinist, was perfectly well until March 15, 1937, when he awoke with headache, nausea and generalized muscular pains. He went to work for two days but was forced to bed on March

17 by aggravation of these symptoms. He had some constipation and noticed that his neck was painful and stiff. He was taken to the Pennsylvania Hospital by ambulance on March 19, the fourth day of the disease. There was no family history of illness.

Examination.—The temperature was 103 F. (by rectum), the pulse rate 100, the respiratory rate 24 and the blood pressure 120 systolic and 100 diastolic. The patient appeared to be extremely ill, a little irrational and euphoric. He complained of frontal headache and photophobia. His eyes were tender to palpation of the eyeballs; the pupils were equal and reacted to light. The fundus on the right appeared a little blurred on the nasal side of the disk. Examination of the left fundus showed a disk which was blurred and not definitely elevated but a little edematous. The nasal mucosa was slightly red, and some pus was draining from the right ethmoidal region. The other sinuses appeared clear. The pharynx was red, and the tonsils were large and red. The ears were normal. There was some retraction of the neck, with definite rigidity. The heart, lungs and abdomen showed nothing abnormal. The extremities were normal. Neurologically, the deep reflexes were active and equal; there was no clonus or Babinski's sign. Kernig's sign was present on each side. The Oppenheim and Gordon signs were also present. There was no Brudzinski's sign.

Course.—A lumbar puncture was performed immediately, and after careful search it was believed that a few gram-positive diplococci were seen, although a culture of the spinal fluid was negative. The cell count showed 435 white blood cells per cubic millimeter, which were thought to be polymorphonuclear leukocytes. The patient remained very ill. On the following day, March 20, the spinal fluid contained 1,360 white blood cells per cubic millimeter, thought to be all lymphocytes. Because of suspicion of the presence of diplococci, a cisternal puncture was done, and 10 cc. of antimeningococcic antitoxin (Mulford's) was injected intracisternally and 20 cc. intravenously. A total of 10,000 units of antitoxin was given. On March 21, 10 cc. of the antitoxin was introduced into the lumbar region of the spinal canal, and 20 cc. was given intravenously. Examination of the eyegrounds showed 1 diopter elevation of the left disk. The patient was given a blood transfusion of 250 cc. of blood on March 21 and again the following day, and on the latter day he appeared improved, his headache and general muscular pains gradually decreasing. On March 26, the eleventh day of the disease, severe serum sickness developed, but the patient otherwise was improved. The temperature was approximately 102 F. for seven days, with a gradual downward trend to normal on the twenty-first day of the disease. The patient was discharged as well on April 16, thirty-two days from the onset of the disease.

Three examinations of the urine gave negative results. On March 19 a blood count showed red cells 4,450,000, hemoglobin 70 per cent, and white cells 9,000; on March 20, white cells 6,700, polymorphonuclears 87 per cent and lymphocytes 13 per cent; on March 22, white cells 5,000, and on March 29, white cells 7,600. The Wassermann and Kahn reactions of the blood were negative. A blood culture on March 29 was negative. Roentgenographic examination on March 20 revealed that the mastoids were normal, but there was some evidence of sinusitis in the ethmoidal cells, with moderate clouding and thickening of the ethmoidal mucous membranes. On March 24, roentgenographic examination of the chest showed nothing abnormal. No acid-fast organisms were seen in any of four specimens of spinal fluid studied.

Serum was taken from this patient on the forty-fourth day from the onset of the disease and did not contain neutralizing antibodies for the virus of lymphocytic choriomeningitis. The patient was seen on May 18, the sixty-fourth day from the onset of the disease. He had gained weight and was perfectly well.

COMMENT

These three cases illustrate the difficulties encountered in making a correct diagnosis of lymphocytic choriomeningitis. The usual clinical and laboratory procedures are inadequate.

In case 1 the disease was thought to be typhoid fever or tuberculous meningitis until the clinical course and the positive results of a neutralization test for lymphocytic choriomeningitis definitely ruled out these conditions.

In case 2 the diagnosis was first believed to be meningococcic meningitis. It was thought that on the tenth day of the disease a few acid-fast bacilli were observed in the spinal fluid. No more of these bacilli were seen. Tuberculous meningitis was seriously considered until the clinical course and the positive results of the neutralization test for lymphocytic choriomeningitis proved this to be the wrong diagnosis.

In case 3 the confusion caused by the observation of gram-positive diplococci was evident. The meningitis was later found not to be of the purulent type. The patient's serum did not contain neutralizing antibodies for the virus of lymphocytic choriomeningitis. As in the cases of Shambaugh [3] and others, it is possible that the meningitis arose secondarily to infection in the ethmoid sinuses. The exact cause of the pleocytosis will probably remain in doubt.

The three cases fulfilled most of the postulates set down by Wallgren [4] in 1925 in his description of the disease believed to be aseptic meningitis. They also simulated, particularly in the headache, constipation and

TABLE 3.—*Data on the Cerebrospinal Fluid in Case 3*

Day	Date	Cells	Differential Count	Initial Pressure, Cm. of Water	Sugar, Mg. per 100 Cc.	Chlorides, Mg. per 100 Cc.	Cultures
4	3/19/37	435	?	160	..	.....	Negative
5	3/20/37	1,360	All lymphocytes	180	58	640.8	Negative
6	3/21/37	200	All lymphocytes	180	..	640	Negative
7	3/22/37	550	All lymphocytes	280	53	639	.....
10	3/25/37	...	All lymphocytes	170	57	646	Negative
18	4/ 2/37	70	.....	130	51	687.4	.....
32	4/16/37	63	All lymphocytes	130	..	.....	.....

3/26/37—colloidal gold curve, 0000000000

course, the two cases reported by Scott and Rivers.[1] All the patients showed persistent and nearly complete lymphocytosis in the spinal fluid.

Clinically, the course of the disease is generally mild. Viets and Warren [5] in 1937 described severe as compared to mild cases. They reported the death of one patient, who was proved to have encephalitic involvement as well as the usual choriomeningitis. So far as is known, this is the only mortality reported due to this disease. Clinically, the disease is more benign than either tuberculous meningitis or encephalitis. The course is generally short, and recovery is nearly 100 per cent. The neurologic changes when present rarely are localizing. The infectiousness of the disease is still a debatable point.

Reports of observations on the cerebrospinal fluid in cases of lymphocytic choriomeningitis indicate that the sugar content is between 40 and 70 mg. and the chlorides about 700 mg. or less per hundred cubic centimeters. Predominant lymphocytosis should always be present. According to Viets and Warren,[5] the protein content in severe cases usually has a tendency to rise.

To make and prove the correct diagnosis of this disease, the virus should be isolated from the spinal fluid. How late the virus can be observed is not definitely known. It apparently disappears soon after the tenth day. According to Rivers and Scott,[2] neutralizing antibodies cannot be seen in the serum until after

3. Shambaugh, George E., Jr.: The Surgical Treatment of Meningitis of Otitic and Nasal Origin, J. A. M. A. **108**: 696-700 (Feb. 27) 1937.
4. Wallgren, A.: Une nouvelle maladie infectieuse du système nerveaux central? Acta Paediat. **4**: 158; 1925.
5. Viets, Henry R., and Warren, Shields: Acute Lymphocytic Meningitis, J. A. M. A. **108**: 357-361 (Jan. 30) 1937.

the sixth week from the onset of the disease. Because of the possible confusion with other forms of meningitis, it seems of great importance that if the virus is not obtained from the spinal fluid the serum should be tested for neutralizing antibodies.

That lymphocytic meningitis may be caused by etiologic agents other than this virus was demonstrated by Rivers and Scott.[2] They failed to find neutralizing antibodies against the lymphocytic choriomeningitis virus in the serums collected from seventeen patients who had recovered from diseases diagnosed as acute aseptic meningitis and from five patients convalescent from lymphocytic meningitis of unknown origin.

The term lymphocytic choriomeningitis should be employed in cases of lymphocytic meningitis only when the organism is found, or when the neutralization tests of the serum have positive results.

SUMMARY AND CONCLUSIONS

Of three cases of lymphocytic meningitis, two were later proved to be lymphocytic choriomeningitis.

It is possible for lymphocytic choriomeningitis to be confused with meningitis caused by other etiologic agents.

It is important to demonstrate the presence of the virus in the spinal fluid early in the course of the disease or the presence of neutralizing antibodies in the serum after the sixth week.

Eighth and Spruce streets.

A NEW METHOD OF PREPARING INFUSION FLUIDS

BASED ON REMOVAL OF PYROGEN BY FILTRATION

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A better understanding of the physiology of body fluids has led to universal intravenous use of dextrose solution and physiologic solution of sodium chloride. There is hardly a medical specialty that can dispense with their use. While most infusion fluids may be said to be safe, occasionally a febrile reaction, or series of reactions, occurs. The factors alleged to cause these reactions are mostly conjectures, which have accumulated in the way of clinical traditions until the preparation of infusion fluids has become so cumbersome that many hospitals now resort to commercially prepared fluids, some Council accepted and some not. This has imposed an added financial burden on hospitals. At the same time most of the factors alleged to be causative of this reaction have not been thoroughly investigated.

REVIEW OF THE LITERATURE

"Reactions" following the intravenous injection of aqueous solutions have been known nearly as long as intravenous therapy itself. These reactions are characterized by fever, often chills, vomiting, and other gastro-intestinal disturbances. The fever begins from thirty to forty-five minutes after injection, reaches its height in from two to four hours and then begins to recede, until it has fallen practically to normal in from four to six hours. In our work there is also found a leukopenia within the first forty-five minutes after injection.

The literature on the subject was reviewed by Seibert[1] in 1923. Up to that time the only definitive work was that of Wechselmann[2] and of Hort and Penfold.[3] Wechselmann in 1911 showed that febrile reactions following the intravenous administration of arsphenamine solutions could be eliminated if the solutions were made with distilled, germ-free water. This disproved the theory that the reactions were a specific water or salt effect. Hort and Penfold in the same year found that water obtained by distillation from a Jena glass retort did not produce fever if injected at once. However, a sample of the same water allowed to stand in an unsterile vessel at room temperature for forty-eight hours produced marked fever. They further showed that there was no parallelism between the toxicity of water and the number of micro-organisms present and that the "pyrogen" was in the supernatant portion of a centrifugated specimen and was filtrable through a Doulton filter, cotton wool and even a Berkefeld filter. Seibert[1] extended this work, identified a bacterium from distilled waters standing in nonsterile containers, showed that the pyrogen was the product of this organism but not the bacterial bodies themselves, and that it was not retained by Berkefeld filters. She further showed that water distilled from an all-pyrex still equipped with a spray-catching trap and used within twenty-four hours was nonpyrogenic. Bourn and Seibert[4] subsequently identified two groups of river bacteria causative of this febrile reaction. They were groups X and XI of Jordan, the latter group causing a milder reaction than the former. This work was confirmed by Banks[5] in 1934. Rademaker[6] in 1930 stated that he confirmed Seibert's work and formulated a set of rules governing the preparation of infusion fluids. Perkins[7] and recently Walter[8] reported that infusion fluids prepared according to the specifications of Rademaker are nonreactive. It may be said that at present fluids are prepared according to the specifications of Seibert and Rademaker in most hospitals and commercial houses.

However, reactions still occur. While in the case of hospital-prepared fluids such accidents may be attributed to the oversight of an overworked staff, for fluids prepared in commercial houses, where occasionally pyrogenic samples are encountered, there is no such excuse. Here mechanized and standardized methods of production are in use.

An analysis of the method recommended by Seibert and Rademaker shows its weakness. Most emphasis

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From the Laboratory of Experimental Surgery, New York University College of Medicine.
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1. Seibert, Florence B.: Fever-Producing Substances Found in Some Distilled Waters, Am. J. Physiol. **67:** 90-104 (Dec.) 1923; The Cause of Many Febrile Reactions Following Intravenous Injections, ibid. **71:** 621 (Feb.) 1925.
2. Wechselmann: Neure Erfahrungen über intravenose Salvarsan injektionenohne Reaktionserscheinungen, München. med. Wchnschr. **58:** 1510 (July) 1911.
3. Hort, E. C., and Penfold, W. J.: The Dangers of Saline Injections, Brit. M. J. **2:** 1589 (Dec. 16) 1911.
4. Bourn, J. M., and Seibert, Florence B.: Cause of Many Febrile Reactions Following Intravenous Injections; Bacteriology of Twelve Distilled Waters, Am. J. Physiol. **71:** 652-659 (Feb.) 1925.
5. Banks, H. M.: Hyperpyrenic Reaction Following Intravenous Therapy, Am. J. Clin. Path. **4:** 260 (May) 1934.
6. Rademaker, Lee: The Cause of Elimination of Reactions After Intravenous Infusions, Ann. Surg. **92:** 195-201 (Aug.) 1930; Reactions After Intravenous Infusions: Further Report on Their Elimination, Surg., Gynec. & Obst. **56:** 956-958 (May) 1933.
7. Perkins, A. H.: Preventing Dangerous Reactions in Intravenous Therapy, Modern Hosp. **38:** 69 (Feb.) 1932.
8. Walter, C. W.: Economical Intravenous Therapy, J. A. M. A. **104:** 1688-1690 (May 11) 1935; Preparation of Safe Intravenous Solutions, Surg., Gynec. & Obst. **63:** 645-646 (Nov.) 1936.

is laid on the distilled water and the purity of the chemicals, but no remedy is recommended for possible contamination during the preparation. The method may be summarized in this schema:

Distillation → addition of chemicals → sterilization

Thus while the distilled water and the chemicals may be of unquestioned purity initially, there is no insurance against contamination during the latter part of the preparation; i. e., during the addition of chemicals and subsequent handling. A redistillation is out of the question, and Berkefeld filtration does not hold back the pyrogen, once it is present.[9]

In this communication we are presenting a new method of preparing intravenous fluids. It is based on the new principle of pyrogen removal by a special type of filtration. This principle was worked out in an extensive investigation of infusion fluids known to be pyrogenic.

In our filtration studies of proved pyrogenic fluids we employed the following types of filter: (1) Jena filter crucible, (2) Berkefeld filter W, (3) Zsigmondy membrane ultrafilters of graded porosity and (4) Seitz serum No. 3 filter pads[10] made of compressed asbestos.

Table 1 embodies a study made on dogs, a preliminary communication of which has been published.[10] The pyrogenic infusion fluids were made from two lots of water: (1) tap water from the city main incubated for forty-eight hours and (2) a markedly turbid water from a fresh water aquarium used in the laboratory. The water was boiled and filtered through hard filter paper, and sodium chloride was added to make a physiologic solution. It was then resterilized in the autoclave before injection. It may here be mentioned that the normal temperature of dogs ranges from 100.6 to 102.6 F.

In this study a number of precautions were necessary. They were occasioned by the fact that, as previously mentioned, in clinical circles, in addition to the presence of pyrogen in infusion fluids, it has been alleged that a number of other factors cause febrile reactions. The precautions pertinent to this investigation were (*a*) the p_H of the fluid,[11] (*b*) contamination by the rubber tubing through which the fluid is administered,[12] (*c*) the temperature of the injected fluid[13] and (*d*) the speed of the injection.[14]

Accordingly, the p_H of the fluid was taken before and after filtration; the rubber tubings used were 2 foot lengths of gum tubing which had previously been used

TABLE 1.—*Study on Dogs* *

Experiment	Kind of Water	Type of Filter	Weight of Dog, Kg.	Volume Injected, Cc.	p_H	Temperature Changes, F.	Changes, Leukocytes × 1,000	Symptoms
1	Tap	.....	17	130	7.17	102.4-104.8	.....	Shivering
2	Aquarium	.....	16	45	7.88	102.2-105.8	30.65-6.4	Shivering, diarrhea
3	Aquarium	Jena & Berkefeld W	13.5	150	....	101.4-105.9	.....	Shivering, diarrhea
4	Tap	Jena & Berkefeld W	14	150	....	102.0-105.2	20.5- 7.8	Shivering, diarrhea
5	Tap	Seitz	15	250	7.02	102.2-101.8	17.8-15.0	None
6	Aquarium	Seitz	16.5	250	7.52	102.6-101.6	21.2-20.8	None
7	Aquarium	Zsigmondy 1-sec.	13	250	....	102.1-105.3	10.2- 4.8	Shivering, vomiting, prostration
8	Tap	Zsigmondy 1-sec.	14	250	....	102.0-104.6	12.8- 6.4	Shivering, diarrhea
9	Tap	Zsigmondy 42-sec.	15	250	....	101.8-104.2	10.5- 5.3	Shivering
10	Aquarium	Zsigmondy 42-sec.	16	210	....	102.4-104.5	40.3-12.75	Shivering, retching
11	Aquarium	Zsigmondy 200-sec.	16	325	7.61	101.8-101.4	17.05-16.8	None
12	Tap	Zsigmondy 200-sec.	15.5	350	7.12	102.4-102.2	16.4 -14.8	None

* Each of the experiments in the tables is representative of at least five experiments.

TABLE 2.—*Study on Human Beings*

Series	Fluid	Subject	Volume Injected, Cc.	Filter	p_H	Temperature Change, F.	Blood Count Change
I	Dextrose Com. 5 % [15] in normal saline, lot X	Patient L. L.	300	0	6.30	100.6-105.6	11,500- 900
		Volunteer M. C.	500	Seitz serum no. 3, twice	....	98.6- 98.4	
II	Glucose Com. 5 % [15] in normal saline, lot Y	Volunteer L. T.	250	0	....	98.4-102.6	8,600- 6,200
		Dog (11 Kg.)	400	0	....	101.6-106.0	17,050- 2,250
		Patient V. H.	1,000	Zsigmondy M 200-second	6.50	99.4- 99.6	14,500- 9,100
		Patient A. S.	600	Seitz, once	....	99.2-100.8	12,000- 8,000
		Patient T. N.	1,000	Seitz, twice	6.85	99.0- 99.4	8,500- 8,000
III	Dextrose Com. 10 % [15] in normal saline	Patient R. S.	150-200	0	4.10	99.6-104.8	
		Dog (13 Kg.)	100	0	....	101.2-104.6	21,830-13,400
		Patient C. D.	500	Zsigmondy M 200-second	5.61	98.8- 99.6	12,200- 8,900
		Patient P. S.	1,000	Seitz, twice	6.61	98.6- 99.2	11,000-11,500
IV	Tap water saline	Volunteer M. S.	125	0	7.71	99.0-102.4	10,000- 6,000
		Volunteer P. R.	1,000	Zsigmondy M 200-second	7.12	99.2- 99.0	8,000- 7,800
		Volunteer D. G.	1,000	Seitz, twice	7.02	98.6- 98.8	7,500- 7,800
V	Aquarium water saline	Volunteer A. P.	40	0	7.88	99.4-103.8	10,000- 5,000
		Volunteer M. S.	1,000	Zsigmondy M 200-second	7.61	98.6- 99.0	8,300- 9,200
		Volunteer G. D.	1,000	Seitz, twice	7.52	98.8- 98.8	16,000-15,200

9. Seibert.[1] Hort and Penfold.[3]

10. Owing to an error in labeling, these filter pads were called Seitz E-K filters in our preliminary communication (Co Tui; McCloskey, K. L.; Schrift, M. H., and Yates, A. L.: Filtration Studies on Reactive Infusion Fluids, Proc. Soc. Exper. Biol. & Med. **35**: 297-300 [Nov.] 1936).

11. Darrow, K. E.: A Review of the Causes of Reactions Following Intravenous Injections of Glucose and Normal Saline, Journal-Lancet **54**: 65-66 (Feb. 1) 1934. Falk, H. C.: Common Causes of Reactions Following Use of Intravenous Solutions and Their Prevention, New York State J. Med. **35**: 480-484 (May 1) 1935. Williams, J. R., and Swett, Madeleine: Hydrogen Ion Concentration Studies on Distilled Water, Physiologic Sodium Chloride, Glucose and Other Solutions Used for Intravenous Medication, J. A. M. A. **78**: 1024-1026 (April 8) 1922. Little, W. D.: Causes of "Reaction with Chill" Following Intravenous Administration of Normal Salt Solution, J. Indiana M. A. **25**: 344-345 (Aug.) 1932.

12. Walter.[5] Co Tui, McCloskey, Schrift and Yates.[10] Darrow.[11] Little.[11]

13. Darrow.[11] Little.[11]

14. Darrow.[11] Falk.[11] Little.[11]

repeatedly for other infusions and were thoroughly rinsed with sterile distilled water and autoclaved before each use; the fluid was maintained at 39 C. throughout the injection; the speed of injection was in each case regulated by gravity or gravity plus air pressure to 0.5 cc. per kilogram of body weight per minute; i. e., the equivalent of 900 cc. every thirty minutes for a man weighing 60 Kg. The temperatures were taken at half-hour intervals for a period of five hours. Only two leukocyte counts were made as a rule, one before and the other forty-five minutes after injection.

Experiments 1 and 2 are the controls. It will be seen that 45 cc. of the aquarium water produced more of a reaction than 130 cc. of the tap water. Experiments 3 and 4, show that neither a Jena filter crucible nor a Berkefeld W filter, the finest obtainable, removes the febrile agent. This result confirms the observations of Hort and Penfold [3] and of Seibert.[1] Filtration through a Seitz serum pad No. 3 removes it, however, as may be seen in experiments 5 and 6. Since Seitz filters act by adsorption, it is concluded that the pyrogen is adsorbable. Experiments 7 to 11 are attempts to determine the particle size of the pyrogen. Since it passes through a 42-second filter but is held back by a 200-second filter, it is concluded that the particles are larger than 50 millimicrons.[15] A more exact study is now being made on the particle size by more precise methods of ultrafiltration.

Table 2 embodies five series of representative experiments on men out of a series of thirty-two pyrogenic fluids investigated. Twelve of these thirty-two were fluids made by local hospitals and fourteen were commercial fluids made by three manufacturers, all Council accepted; the rest were made in our own laboratory.

The first series dealt with a commercial 5 per cent dextrose in saline solution. This preparation is described by the manufacturer as "a solution containing in each 100 cc. 5 Gm. of anhydrous dextrose and 0.85 Gm. of sodium chloride." The protocol of L. L. was taken from the hospital record. It will be seen that the temperature after the intravenous injection rose from 100.6 to 105.6 F. and that the leukocyte count fell in forty-five minutes from 11,500 to 900. Five hundred cubic centimeters of the same fluid filtered through two Seitz serum No. 3 asbestos pads gave no fever in volunteer M. C. Series II deals with another batch of 5 per cent dextrose in saline solution which was biologically tested and rejected as pyrogenic by the same commercial house and submitted to this laboratory for investigation. Volunteer L. T. responded to an intravenous injection of 250 cc. of this fluid by a temperature of 102.6 F. Four hundred cubic centimeters of the same solution was given to an 11 Kg. dog, resulting in a marked temperature rise and leukopenia. One thousand cubic centimeters of the same fluid filtered through a 200-second Zsigmondy membrane filter gave no reaction to the patient. Through one layer of Seitz serum No. 3 filter, 600 cc. still gave a slight fever but 1,000 cc. after filtration through two layers of Seitz filter pads was followed by no rise in temperature.

Series III was performed with a commercial 10 per cent dextrose solution from another manufacturer. This solution labeled 10 per cent "dextrose solution" is described in the label as "a sterile solution of dextrose-glucose 10% in physiological saline." Series IV and V were saline solution and aquarium water used on the dogs in table 2. The toxicity of the aquarium water is shown in the experiment in which 40 cc. in a human being (A. P.) gave a temperature of 103.8 F. and a fall of the leukocyte count of from 10,000 to 5,000. The lack of reaction when 1,000 cc. each of the filtrate of the same water is injected after filtration through a 200-second Zsigmondy and through a Seitz serum No. 3 filter attests the high efficiency of these methods of filtration and confirms the observations made in dogs.

The leukopenia accompanying this reaction is invariably present in dogs, as may be seen in table 1, but less constant in human beings, although when the reaction is marked it is unmistakable, as in series I, in which the drop in the count reached a level as low as 900. This is a transient phenomenon, most marked in the first hour or two, with restoration to normal in a few hours. This phenomenon will be the primary subject of a subsequent study.

It will be seen from the p_H values recorded in tables 1 and 2 that they range from p_H 4.10 to 7.88 for reactive fluids and from 5.61 to 7.52 for nonreactive fluids. Under these conditions, then, the p_H value per se cannot be the cause of the reactions caused by these fluids.

COMMENT

The theoretical implication of this work is that the pyrogen found in infusion fluids is of a particulate nature, of a larger order of magnitude than 50 millimicrons but smaller than 1 micron. Whether it is of protein or of other composition, whether it acts as a particle per se or in some other way and whether other particulate substances of this dimension can reproduce this phenomenology remain to be investigated. This finding is not necessarily at variance with Seibert's. It is easily conceivable that the products of the "bacillus pyrogenes" could occur as particles of this size.

The practical result of this work is that there are now available two processes of filtration which effectively remove the reactive agent from infusion fluids. One is ultrafiltration, which, however useful it may be in the determination of particle size, is too slow and technically too difficult for clinical use. The other process is adsorptive filtration through two layers of Seitz serum No. 3 filter pads (compressed asbestos). This process is easy to manipulate and should be feasible for use in hospitals and commercial houses. The adsorptive filtration is really the core of the process, since neither distillation of the water nor a final sterilization by heat is essential, although both are recommended: The former, because on general principles it is best to use water free of chemicals other than those prescribed; the latter, to avoid bacterial contamination during bottling. This new process of infusion fluid preparation may be summarized by the schema:

Distillation → addition of chemicals → absorptive filtration → sterilization

SUMMARY

In a study with infusion fluids known to be fever producing, it was shown that:

1. The fever-producing agent is removable by filtration through an adsorptive filter and through a 200-second Zsigmondy filter.

2. The agent is of a particulate nature of a larger order of magnitude than 50 millimicrons but smaller than 1 micron.

3. A new method of infusion fluid preparation consists of passing the final fluid mixture through compressed asbestos filters of the Seitz serum No. 3 type.

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THE VISUAL RAVAGES OF TRACHOMA

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While the ravages and destructive influence of trachoma are well known, it would be difficult to say offhand how great percentally is the visual damage from that disease and how much that damage can be remedied by treatment. Therefore this analysis was made of the records of 2,713 consecutive cases of trachoma seen in the Southern Illinois Trachoma Clinics to answer that question. The U. S. Public Health Service [1] estimates that 4 per cent of patients with trachoma in any given community are blind. MacCallan [2] gives the statistics on the visual acuity of the inhabitants of the village of Bahtim. Forty-eight per cent of the 1,301 trachomatous individuals measured had vision of less than 6/18, while 5.5 per cent were blind in one eye and only 1 per cent blind in both eyes. The standard of blindness was the inability to count fingers at less than 1 meter. But, says MacCallan, "The causes of blindness in the great majority of cases were the results of acute conjunctivitis and ulceration of the cornea. There were many cases of primary glaucoma causing blindness and a comparatively small number of cases in which trachoma was the only cause without the help of acute conjunctivitis." More accurate figures are not available.

The patients in the series here reported were divided into several classes according to visual acuity for specific reasons. It is well known that ability to read fine type requires visual acuity of 20/50 at least. Consequently, vision of less than 20/50 implies difficulty in near vision. According to the definitions accepted by the American Medical Association in 1935, less than 20/200 constitutes industrial blindness. Thus there are clearly defined limits for the various classes which may be discussed under the following sections. It must be added that corrected vision was utilized when available, but, as these clinics are only for the treatment of trachoma in indigent patients, refractions could not be performed and the majority of glasses that were in the possession of patients were of the "five and ten cent store" variety. But every patient was examined ophthalmoscopically and the refractive error estimated roughly. Any complicating factors that could have an influence on the vision were noted and we were thus able to state definitely whether or not the decreased visual acuity was due to trachoma and its complications.

A. Vision better than 20/50: In the total number of 2,713 patients there were seventeen with unilateral anophthalmos from one cause or another. Therefore we are dealing with 5,409 eyes. Of that number 2,889, or 53.5 per cent, had visual acuity of better than 20/50 and consequently are not considered in this article.

B. Vision between 20/50 and 20/200: Of the total number of 5,409 eyes 1,596, or 29.5 per cent, had visual acuity between 20/50 and 20/200. The reduction in vision was due to trachoma in 653 of that number, or 40.9 per cent. Under treatment, 250, or 39.8 per cent, improved to vision of better than 20/50.

C. Vision less than 20/200: Of the total number of 5,409 eyes 924, or 17.0 per cent, had vision of less than 20/200. The reduction in vision was due to trachoma in 566, or 61.1 per cent. Under treatment, 177, or 31.2 per cent, improved to vision of better than 20/200.

D. So far we have spoken of individual eyes, so now let us speak of patients. Of the 2,713 patients 211, or 7.8 per cent, had suffered a reduction in vision in the better eye as the result of trachoma to less than 20/200 (industrial blindness). Under treatment fifty-five, or 26.1 per cent, of that number improved to vision of better than 20/200.

It is fully realized that these figures are not universally applicable, for trachoma varies in severity in various localities according to the character of the population and the degree of sanitation, according to the climate, the temperature, and the amount of humidity, and above all according to that indefinite factor known as racial resistance. The patients in these clinics are Caucasians who have been more or less inbred for more than a century, who are mostly country dwellers, and whose ideas of sanitation are very rudimentary.

SUMMARY

1. In the Trachoma Clinics of Southern Illinois, 7.8 per cent of the patients are industrially blind as the result of trachoma and its complications.

2. More than one fourth of these can be restored to useful vision by treatment.

3. Of the individual trachomatous eyes, about 30 per cent have a reduction in vision that interferes with satisfactory reading, about two fifths of the reduction being due to trachoma.

4. Of the individual trachomatous eyes, 17 per cent are industrially blind, about three fifths of the reduction being due to trachoma.

5. Vision can be restored to the useful point in from one fourth to one third of the eyes, the percentage varying according to the degree of loss and the length of time it has existed.

58 East Washington Street.

From the Governor Horner Trachoma Clinics of Southern Illinois.
Read before the Section on Ophthalmology at the Eighty-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 9, 1937.

1. Rice, C. E.: Personal communication to the authors.
2. MacCallan, A. F.: Trachoma, London, Butterworth & Co., Ltd., 1936, p. 158.

ABSTRACT OF DISCUSSION

DR. C. E. RICE, Washington, D. C.: Two years ago I visited some of these trachoma clinics in southern Illinois. Dr. Gradle is to be congratulated on the way this work has been organized. It is a fine example of a public health enterprise. In a study of 1,600 case records of trachoma patients hospitalized in Missouri, it was found that there were 8.2 blind eyes to each hundred cases of trachoma. That would figure out slightly more than 4 per cent of the patients blind if the two eyes were always affected to the same degree. Fortunately, that is not always true. These blind eyes were those with light perception. Of about 4,000 case records studied (not all patients hospitalized) there were 12.5 per cent with vision of 20/200 or less in the better eye, due to trachoma. Dr. Gradle found 8 per cent of the patients with vision of 20/200 or less because of trachoma. It is of much interest that in Dr. Gradle's study it was found that approximately one fourth of those persons blind from trachoma could have useful vision restored by proper treatment. The earliest case of severe trachoma I have seen was in a baby of 18 months. Pannus had already involved the greater part of both corneas. In this case, a bilateral canthotomy and grattage was done following two months of hospital care. The final result was excellent. This case is cited to illustrate that trachoma can be very severe early

in life. Another interesting point is that trachoma can remain unilateral. I have seen twelve patients with unilateral involvement to the extent that one eye of each patient was blind, while the other eye had normal visual acuity and no sign of a previous trachomatous infection. In Egypt it would appear that most of the blindness in trachoma sufferers may be due to complicating gonococcic infections of the conjunctiva. This is not true in the endemic trachoma area of this country. Trachoma produces blindness because of the transfer of the disease process or infection to the corneal tissue. This transfer occurs early. As to whether economic blindness will occur in the untreated case depends on the factors of (1) virulence of the infection and (2) individual resistance, and, as the authors say, there are apparently racial factors and possibly geographic factors.

GAS GANGRENE TREATED WITH SULFANILAMIDE

REPORT OF THREE CASES

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Search of the literature fails to reveal the use of sulfanilamide [1] heretofore in the treatment of gas gangrene. It appears to be a valuable adjunct in this respect and offers great promise with regard to saving of limb and life.

CASE 1.—W. C., a Negro youth aged 15, admitted to Franklin Square Hospital Jan. 12, 1937, after being struck by an automobile while roller skating, suffered mild shock and concussion, a transverse fracture of the right femur in the mid third, and a compound fracture of the left femur in the lower third which extended longitudinally through the metaphysis and involved the outer half of the epiphyseal cartilage plate; the proximal fragment protruded through the lateral surface of the thigh above the knee. The wound area was treated, the compound fracture was reduced, dressings of dry gauze were applied, and both fractures were splinted; 1,500 units of tetanus antitoxin plus 10,000 units of combined gas bacillus antitoxin were given. His temperature rose to 102 F. on the second day and fluctuated in an irregular manner.

When I saw him on the fifth day after injury his left leg was very much swollen; it was well splinted with a temporary arrangement, as was the right. Palpation of the right thigh revealed no abnormal swelling. He complained of pain in the left leg and when the dry, blood-stained dressings were removed, gas escaped with a loud hiss and continued to bubble from the wound, giving off a somewhat pungent odor. Gas crepitation could be felt over the lower part of the leg from 4 inches above the ankle, about the knee, and up the thigh to within 3 inches of the groin. This distention with gas had occurred with great rapidity—literally over night. The wound was discharging hemolyzed blood and necrotic material. There was no frank pus. The patient looked very ill. He was restless, talkative and apprehensive, with lapsing moments of quiet which suggested marked toxicity. The pulse was 140, temperature 101, respiration 24, leukocyte count 17,500.

A spica plaster splint was applied about the body, right hip and leg, holding the femoral fragments in good position. Hasty presurgical preparation was carried out, and nitrous oxide and oxygen were administered. An incision was made from just below the greater trochanter down the outer side of the left leg through the skin, subcutaneous tissue, and tensor fasciae femoris, extended through the wound site, where much necrotic material was encountered, and down the lower part of the leg to just above the ankle. In this long, widely gaping wound, only about twelve clamps and ties were necessary to control hemorrhage. The tissues were edematous and pale, with practically no capillary oozing. Scattered indiscriminately about the wound were four sharply delineated areas, each roughly 2 inches long by 1½ inches wide, of black, gangrenous tissue. Crepitation persisted over much of the leg. No attempt at débridement was made. The long, wide wound was dressed with loosely applied gauze saturated with hydrogen peroxide and protected with petrolatum gauze. The patient was under anesthesia a very short time and then returned to his bed, where sand bags were used to fix the leg. Because of the great distention, extensive infection and the patient's toxicity, amputation seemed to offer little hope. His prognosis was very poor.

Sulfanilamide therapy was immediately instituted; Long [2] suggested a dose of three tablets of 5 grains (0.3 Gm.) each every six hours. This dose was continued for two days, followed by two tablets every six hours for five days and then one tablet every three hours for an additional two days. Eighteen hours after the first dose of sulfanilamide the patient's temperature was normal, he had no toxic symptoms and he appeared quite well.

Excellent union occurred in the right femur. His general condition has remained good; there have been no subsequent toxic symptoms. The black, necrotic, gangrenous areas softened, sloughed, and were expelled in masses resembling dirty putty. The long, wide wound was allowed to granulate and epithelize. A low grade osteomyelitis subsequently developed, which is responding very well to treatment. A sequestrum of a portion of the metaphysis has been removed; union is excellent. At times, when dressings have been too infrequent or drainage not entirely free, he has exhibited a slight rise of temperature.

At operation, smears of the wound revealed immense numbers of gas bacilli, morphologically B. welchii; also a few cocci in chains and tetrads. The laboratory reported only Staphylococcus aureus in culture, failing to obtain either streptococcus or gas bacillus growth.[3]

CASE 2.—A. C., a Negro aged 42, was admitted to the same institution March 21, 1937, after being struck by an automobile. Aside from sundry bruises and contusions, he sustained extensive multiple, comminuted fractures of the left tibia and fibula, with similar injuries to the right lower leg and a compound wound about 1 inch by 2½ inches over the upper, anterior third of the tibia. Considerable soft tissue crushing and damage was evident, with no air or gas palpable in either leg. The patient was given a prophylactic dose of tetanus antitoxin and combined gas bacillus antitoxin.

His temperature on the third day was 100.4 F., with a pulse rate of 95; marked crepitation of gas could be felt about and above the wound, extending to the lateral side of the knee. The wound was discharging hemolyzed blood. The leukocyte count was 12,000.

Sulfanilamide therapy was started, five tablets every four hours. The patient received 25 grains (1.6 Gm.) the third day (the first day of this therapy), 75 grains (5 Gm.) the fourth day, 30 grains (2 Gm.) the fifth day and 45 grains (3 Gm.) the sixth day, after which it was discontinued.

His temperature ranged from normal to 99 plus until the tenth day and thereafter was normal. All toxic symptoms disappeared on the fourth day, that is, the second day of sulfanilamide therapy. The wound was not disturbed. One felt that he had sufficient drainage from the wide open compound wound, and after the experience with sulfanilamide in the first case it seemed worth while to depend on it entirely in this much earlier stage of gas gangrene.

Recovery was complicated by staphylococcic osteomyelitis of the upper end of the right tibia, which is responding to treatment.

No organisms were found on culture of the wound on the third day. This may have been due to much hemorrhage occurring before the culture was made. However, there was a sufficient quantity of gas in the tissues to warrant a presumptive diagnosis of infection with gas bacilli.

CASE 3.—Miss M. C., aged 21 years, white, admitted to Union Memorial Hospital in a severe state of shock at 3:45 a. m., May 8, 1937, had been injured in an elevator accident in a hotel.

Physical examination revealed ecchymosis of the right eye, bruises and contusions of the arms, right breast and right ilium,

Dr. Perrin H. Long of the Johns Hopkins Hospital and Drs. T. Battaglia, S. S. Borssuck, M. J. Sodara and W. F. Feidler of the house staff of the Franklin Square Hospital cooperated in the treatment and care of cases 1 and 2, and Dr. Arthur J. Weinberg treated case 3.

1. "Sulfanilamide" (The Council Name for Para-Aminobenzene-Sulfonamide), J. A. M. A. **108**: 1340 (April 17) 1937. Sulfanilamide and Related Compounds, ibid. **108**: 1888 (May 29) 1937.

2. Long, Perrin H.: Personal communication to the author.

3. Momentary difficulties in the laboratory prevented proper culturing.

laceration of the right scapula, and a compound comminuted fracture of the lower third of the right femur with severe crushing of the soft tissues. As soon as her condition warranted, she was taken to the operating room and a guillotine amputation of the right leg was done under cyclopropane anesthesia at the upper third of the thigh, after thorough clean-up with green soap, physiologic solution of sodium chloride and iodine; the wound of the shoulder was sutured. Amputation was performed above the fracture area; the stump was closed in the usual manner with two cigaret drains. She was immediately given prophylactic doses of tetanus antitoxin and combined gas bacillus antitoxin.

Her temperature on admission was 99.3, rose to 102.2 the second day, and was 103.3 the third day, with a pulse of 140 per minute. A culture of the wound revealed B. welchii. The leukocyte count was 18,000. Hemoglobin was 70 per cent.

Sulfanilamide was administered, four tablets of 5 grains (0.3 Gm.) each with 10 grains (0.65 Gm.) of sodium bicarbonate every four hours, totaling 60 grains (4 Gm.) the first day, 85 grains (5.5 Gm.) the second day, 65 grains (4.3 Gm.) the third day, 40 grains (2.6 Gm.) the fourth day, 60 grains (4 Gm.) the fifth day and 40 grains (2.6 Gm.) the sixth day, after which it was discontinued. Her temperature remained elevated until the seventh day, when it dropped to 98 and ranged to 99.5, being normal after the twenty-fifth day. Her pulse remained around 100 to the minute. X-ray examination of the stump on the second day revealed gas pockets. The urine on the second day showed albumin 2 plus, sugar 1 plus and numerous hyaline casts, but thereafter was normal.

Quantitative determination of sulfanilamide in the blood on the fourth day revealed 8.4 mg. per hundred cubic centimeters.

As soon as gas bacilli were discovered in the discharge on the second day, the sutures in the stump were removed; there has been some necrosis and sloughing. The wound is at present granulating and the patient is progressing well toward complete recovery.

Marked clinical improvement was noted in all three cases, especially cases 1 and 3, within twenty-four hours after sulfanilamide therapy was instituted.

SULFANILAMIDE

Borssuck [4] first called my attention to the use of sulfanilamide and to the work of Domagk,[5] who demonstrated its selective action on streptococcic infection in mice.

Long and Bliss [6] called attention to the clinical value of sulfanilamide in a preliminary report and later made further observations,[7] which included the proper dosage for oral administration. They suggest decreasing rapidly the amount of chemical administered following prompt improvement, with a longer period of administration in a mild, chronic infection. They note that toxic manifestations are apparently infrequent and may be associated with sulfhemoglobinemia; they reiterate the chemotherapeutic effect of this chemical in the treatment of infections produced by beta hemolytic streptococci.

I have used this product in such cases and in mixed infections of streptococci and hemolytic staphylococci; also in one case of Staphylococcus aureus infection, all with excellent results.

Marshall, Emerson and Cutting [8] have reported on the excretion of this chemical and they comment that the mechanism of its action is not yet clear, that the curative effect is exerted by maintaining a high concentration in the blood and tissues for several days, that adequate concentration can be as quickly obtained by oral administration as by injection, and they note various factors influencing concentration. They suggest that the daily dose be divided in order to maintain as nearly uniform concentration in blood and tissues as possible; a four hour interval between doses is indicated, and they suggest a large single initial dose. They state that no advantage is gained by subcutaneous injections as compared to oral administration. They found that by establishing equilibrium between intake and output nearly 100 per cent of the drug was recovered from the urine. Excretion is slowed by impaired renal function and they suggest caution in cases of this type.

GAS GANGRENE

The literature is replete with articles on various phases of gas gangrene and anaerobic infection. Many authors call attention to the incidence of gas gangrene in compound fractures. Ghormley [9] calls attention to the value of antitoxin. In my experience it has been extremely disappointing. Each of my three patients received prophylactic doses of 10,000 units of combined gas antitoxin. Ghormley also calls attention to the mixed type of infection often present in these wounds.

Millar [10] lists a series of 607 cases occurring in civil life, not including obstetric infections, in which B. welchii was associated with streptococci and staphylococci in six, with cocci in three and with miscellaneous bacteria in nineteen. He remarks that gas gangrene is not listed as a cause of death in the Bureau of Census mortality tables of the registration area in the continental United States.

The surgeon general's [11] report calls attention to symbiosis of various aerobes and anaerobes. In Base Hospital No. 15, A. E. F., in seventy-three cases of gas gangrene with death, activity of the gas bacilli was self limiting and practically confined to the first week after the wound was received, with a drop in anaerobes from 38 to 7 per cent during the first seven days, as the common pyogens streptococcus and staphylococcus accumulated rapidly in the wound. The symbiotic effect was particularly prominent in fatal wounds. Infections with anaerobes alone showed a high death rate but a short period of danger to life. A streptococcic bacteremia was by far the most important cause of death, especially in patients living beyond the first week, which was roughly established as a self-limiting period of gangrenous process and "many deaths attributed to the anaerobes were in reality deaths due to streptococcus in the process of replacing them." In Evacuation Hospital No. 8, A. E. F., between Sept. 10 and Nov. 13, 1918, 4,741 wounded were admitted to the hospital. Of these, 4,683 required surgical treatment; 206 of the wounded required amputation, and of the 206, ninety-six, or 46.6 per cent, were for gas gangrene. The total number of deaths was 363, of which sixty-one, or 17 per cent, were due to gas gangrene, the second most important cause of death. "Of 890 wound cultures 478, or 53 per cent, contained anaerobic bacilli. Of these 478 wounds, 321, or 67 per cent, at no time showed clinical evidence of gas gangrene infection. . . . Of the remainder of the gas gangrene cases, sixteen, or 3 per cent, developed gas gangrene after débridement, while in 141 cases, or 29 per cent, gas gangrene was clinically evident at the time the wound culture

4. Borssuck, S. S. (graduate of Tübingen, Wurttemberg, February 1936): Personal communication to the author.
5. Domagk, Gerhard: Deutsche med. Wchnschr. **61**: 250 (Feb. 15) 1935.
6. Long, P. H., and Bliss, Eleanor A.: Para-Aminobenzene-Sulfonamide and Its Derivatives, J. A. M. A. **108**: 32 (Jan. 2) 1937.
7. Long, P. H., and Bliss, Eleanor A.: Para-Aminobenzene-Sulfonamide and Its Derivatives, Arch. Surg. **34**: 351 (Feb.) 1937.
8. Marshall, E. K., Jr.; Emerson, Kendall, Jr., and Cutting, W. C.: Para-Aminobenzene-Sulfonamide, J. A. M. A. **108**: 953 (March 20) 1937.
9. Ghormley, R. K.: J. Bone & Joint Surg. **17**: 907 (Oct.) 1935.
10. Millar, W. M.: Surg., Gynec. & Obst. **54**: 232 (Feb.) 1932.
11. Surgeon-General's Report, U. S. Army **12**: 407, 1929.

was made. It is thus seen that more than two thirds of the severe, nontransportable wounds contaminated by anerobic bacilli failed to develop gangrene, all of these cases being under observation at least five days, and many of them as long as two weeks. This fact involves a very important pathological principle. These bacteria are incapable of producing gas gangrene by their presence alone and must be accompanied by the failure of circulation, the extensive cellular damage of large quantities of muscle, and in all probability by constantly progressive increase of this series of factors."

Experimentally, injection of large quantities of washed B. welchii failed to produce lesions in laboratory animals, but lesions would develop if either acid or powdered glass was injected with the bacilli or if slight injury to the muscles preceded the injection. "In other words, the Welch bacillus is not a true parasite but a saprophyte that cannot grow in healthy tissue; it is able to thrive only if the body cells are first injured by some chemical or mechanical means. The lesions involve the muscles, the blood vessels, and the fat of the subcutaneous connective tissues."

Ghormley [9] gives 42.5 per cent mortality, slightly lower than 53 per cent recorded in the surgeon general's report.[11] He states that 86 per cent of a series of thirty-three patients recovered with the use of antitoxin. Prophylactic dosage of combined gas bacillus antitoxin did not prevent infection in the three cases now reported. Millar [10] found a mortality of 47.2 per cent, recovery in 48 per cent, and unknown outcome in 4.8 per cent in 607 cases.

Long [12] is at present conducting experiments with B. welchii to determine the effect of sulfanilamide on their growth and phagocytosis. He believes that phagocytosis is not inhibited or enhanced by this drug, that it acts directly to inhibit the growth or multiplication of these bacilli and that its mechanism of action on other bacteria is similar. He states that a prophylactic effect has been noted whenever it has been used therapeutically in experimentation. He suggests that prophylactic doses of two to three tablets every four hours with 10 grains of sodium bicarbonate be given in all severe or crushing injuries in which infection with streptococci or gas bacilli might subsequently occur.

Mellon, Gross and Cooper [13] find that sulfanilamide does not affect phagocytosis or change the histologic response to streptococcic infections in mice.

SUMMARY

1. The first case represents an amazing, not to say dramatic, result in a desperate case of gas gangrene. Cases 2 and 3 are confirmatory.

2. Sensible, conservative surgical principles should be combined with the use of sulfanilamide.

3. No previous record has been found of its employment in this manner.

4. I am convinced it will be of great value in saving limb and life.

5. Sulfanilamide probably has a specific effect on gas bacilli, but the results may in part be due to checking symbiotic growth with the streptococcus.

6. The problem should have further study and experimentation.

101 West Read Street.

12. Long, P. H.: Personal communication to the author.

13. Mellon, R. R.; Gross, Paul, and Cooper, F. B.: Experimental Studies with Sulfanilamide and with Prontosil, J. A. M. A. **108**: 1858 (May 29) 1937.

THE COMPARATIVE VALUE OF PURINE DERIVATIVES IN THE TREATMENT OF ANGINA PECTORIS

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During recent years theophylline with ethylenediamine (aminophylline) has enjoyed considerable popularity in the treatment of angina pectoris. This drug was introduced in 1908 by Dessauer [1] as a preparation which was more soluble, more effective and less likely to produce nausea than theophylline. More recently theophylline and theobromine have been linked chemically with other compounds in an attempt to imitate and improve on the properties of aminophylline. Each of these drugs has been used in angina pectoris with good results. Unfortunately, however, little exact information is available concerning the relative merits of these purine derivatives.

The available reports are based on clinical experience with the drugs.[2] It has been shown [3] that clinical evaluation alone gives a false impression as to the efficacy of treatment in angina, for the administration of even inert medication may be followed by clinical improvement. The purpose of the present investigation is to determine the comparative efficacy of caffeine, theobromine and theophylline derivatives in the treatment of angina pectoris by using the usual clinical methods and also by measuring the amount of work under standardized conditions which patients can perform before heart pain develops.

METHODS

A detailed plan of the investigation has been published in previous communications.[4] For the purpose of this investigation, seventeen patients who showed definite improvement following one or more of the purine derivatives were selected. So far as could be determined, they suffered from no disease other than coronary arteriosclerosis. The clinical course and the amount of work under standardized conditions which they could perform before cardiac pain developed were well known in each instance.

Each drug was given four times a day for one week, at the end of which time the exercise tolerance and

This study was aided by a grant from the DeLamar Mobile Research Fund of the Harvard Medical School.

From the Medical Research Department of the Beth Israel Hospital and the Department of Medicine, Harvard Medical School.

The following pharmaceutical houses gave generous supplies of their products: Abbott Laboratories, theophylline with methyl glucamine; Bilhuber-Knoll Corporation, theobromine with calcium salicylate and theophylline with calcium salicylate; Eli Lilly & Co., theophylline mono-ethanolamine and theophylline mono-ethanolamine with amytal; Winthrop Chemical Co., Inc., theobromine with phenobarbital and theophylline with sodium acetate.

1. Dessauer, P.: Euphyllin ein neues Diuretikum, Therap. Monatschr. **22**: 401, 1908.

2. Dock, William: The Use of Theobromine for Pain of Arteriosclerotic Origin, California & West. Med. **25**: 636 (Nov.) 1926. Askanazy, S.: Klinishes ueber Diuretin, Deutsches Arch. f. klin. Med. **56**: 209. 1895. Musser, J. H.: Theophyllin Ethylenediamine in Heart Disease Associated with Pain, J. A. M. A. **91**: 1242 (Oct. 27) 1928. Gilbert, N. C., and Kerr, J. A.: Clinic Results in Treatment of Angina Pectoris with Purine Base Diuretics, ibid. **92**: 201 (Jan. 19) 1929. Smith, F. M.; Rathe, H. W., and Paul, W. D.: Theophylline in the Treatment of Disease of the Coronary Arteries, Arch. Int. Med. **56**: 1250 (Dec.) 1935. Coogan, T. J.: Uses of Theophyllin Calcium Salicylate, Tr. Am. Therap. Soc. **34**: 137, 1934.

3. Evans, W., and Hoyle, Clifford: The Comparative Value of Drugs Used in Continuous Treatment of Angina Pectoris, Quart. J. Med. **2**: 311 (July) 1933. Master, A. M.: Treatment of Coronary Thrombosis and Angina Pectoris, M. Clin. North America **19**: 873 (Nov.) 1935. Riseman and Brown.[4]

4. Riseman, J. E. F., and Brown, M. G.: The Medicinal Treatment of Angina Pectoris, Arch. Int. Med. **60**: 100 (July) 1937. Riseman, J. E. F., and Stern, Beatrice: A Standardized Exercise Tolerance Test for Patients with Angina Pectoris on Exertion, Am. J. M. Sc. **188**: 646 (Nov.) 1934.

the frequency of attacks during the preceding week were determined independently by two observers. When there was evidence that the medication had benefited the patient, tablets of sodium bicarbonate were substituted until the effect of the specific medication disappeared. At a later date the efficacy of the effective medication was again determined without the patient's knowledge.

Because of occasional spontaneous changes in the clinical condition of the patients [5] it was impossible to administer every drug to each of the seventeen patients. Seven of the eleven preparations were used in from fifteen to seventeen cases; four were used in from eleven to thirteen cases.

In general the amount of work under standardized conditions which a patient with angina pectoris can do is an accurate index of the response to therapy and affords a means of checking the clinical impression. Medication that resulted in an increase in exercise tolerance of 50 per cent or more usually caused a striking diminution or complete absence of attacks in daily life. An increase of 20 per cent or less was accompanied by little or no clinical improvement obvious to the patient. For the purposes of simplicity in presentation, therefore, the results are presented in terms of increase in exercise tolerance.

TABLE 1.—*The Effect of Increasing the Dosage of Purine*

Dose 4 Times Daily, Grains	Patients Benefited, per Cent	Frequency of Gastric Distress, per Cent
Theophylline		
2	38	13
3	54	13
4	38	38
Theophylline with calcium salicylate		
4	46	0
8	67	27
12	43	86*

* In half of these patients the discomfort was so severe that they discontinued the medication.

The optimum dosage of each drug was determined by measuring the increase in exercise tolerance following different dosages and also by ascertaining the frequency of gastric distress.

RESULTS

The Optimum Dosage.—In general the frequency and degree of improvement increased as the dosage was increased. All theobromine and theophylline derivatives, however, caused nausea or heartburn when given in sufficiently large amounts, and when this gastric distress became severe any improvement which had been induced by smaller doses disappeared. The optimum dosage for most patients was the maximum amount that could be given without causing severe gastric distress (table 1); in a few instances, however, equally satisfactory improvement could be obtained with somewhat smaller doses.

There is reason to believe that the available preparations are loose chemical mixtures. The soluble preparations probably break down in the stomach to give the free purine and the chemical compound which has been added to make the preparation more soluble. It is not surprising to find, therefore, that both the beneficial effects and the gastric distress increase roughly in proportion to the amount of theobromine or theophylline present in the doses administered. The calcium salicylate mixtures are less soluble; larger doses of theobromine or theophylline can be given before gastric distress becomes evident.

Theophylline Derivatives.—Six theophylline preparations were used: two were relatively insoluble (theophylline, 3 grains [0.2 Gm.] and theophylline with calcium salicylate, 8 grains [0.5 Gm.]); the remaining four were more soluble (theophylline with sodium acetate 2½ grains [0.15 Gm.], theophylline with ethylenediamine 3 grains, theophylline mono-ethynolamine 3 grains, theophylline with methylglucamine 2⅓ grains [0.14 Gm.]). The most effective preparation was theophylline with sodium acetate (table 2). Patients who did not respond to this drug usually showed a good response to theophylline with calcium salicylate, which was the second best preparation.

TABLE 2.—*The Comparative Value and Cost of Purine Derivatives*

Preparation and Dosage*	Total Patients Benefited, per Cent	Patients Showing 50-100% Increase in Exercise Tolerance, per Cent†	Frequency of Gastric Distress, per Cent	Cost per 1,000 Doses, Dollars
Theophylline with sodium acetate, 2½ grains	80	27	13	26.25‡
Theobromine with sodium acetate, 7½ grains	77	24	18	5.00
Theophylline with calcium salicylate, 8 grains	67	13	27	32.00§
Theophylline with ethylenediamine, 3 grains	59	12	30	21.00§
Theobromine with calcium salicylate, 15 grains	56	19	13	32.00§
Theophylline, 3 grains	54	7	13	6.55
Theophylline mono-ethanolamine, 3 grains	54	9	9	36.00§
Theophylline with methylglucamine, 2⅓ grains	45	0	9	16.60§
Theobromine with sodium salicylate, 7½ grains	34	0	7	3.85
Theobromine, 5 grains	31	13	6	3.16

* Each preparation was given four times a day; on arising, after lunch, after supper and before retiring.
† Great improvement.
‡ The cost of these preparations is based on the prices published in the catalogues of the pharmaceutical houses.
§ These represent the cost per thousand doses of the medication in tablet or capsule form as prepared by the pharmaceutical houses. All other costs are based on the price per pound of powder plus the cost of manufacturing tablets.

The theophylline content of the effective dosages varied from 1⅗ to 3⅘ grains (0.08 to 0.25 Gm.). The effective dosage of theophylline with ethylenediamine and that of theophylline mono-ethynolamine apparently depended in large measure on the theophylline content. The addition of sodium acetate and methyl glucamine apparently enhanced the effect of theophylline, whereas the addition of calcium salicylate allowed more theophylline to be administered before gastric distress became evident.

TABLE 3.—*The Effect of Combining a Sedative with a Purine*

	Preparation and Dosage*	Patients Benefited, per Cent	Frequency of Untoward Effects, per Cent
A	Theobromine, 5 grains	31	6
	Theobromine (5 grains) and phenobarbital† (½ grain)	40	20
B	Theophylline mono-ethanolamine,‡ 3 grains	54	9
	Theophylline mono-ethanolamine (3 grains) and amytal (¾ grain)	60	10

* All preparations were given four times daily.
† Theominal (Winthrop Chemical Co., Inc.).
‡ Theamin (Eli Lilly & Co.).

Calcium salicylate and ethylenediamine hydrochloride were each administered to ten patients; in no instance was there any evidence of beneficial effect.

5. Riseman, J. E. F., and Brown, M. G.: The Clinical Course of Angina Pectoris, to be published.

Theobromine Preparations. — Theobromine with sodium acetate has received insufficient attention in the past. This drug in doses of 7½ grains (0.5 Gm.) four times a day was far superior to all other preparations of theobromine and was as effective as the best of the theophylline compounds. Theobromine with calcium salicylate (15 grains [1 Gm.]) was also of considerable value and about equal to theophylline with ethylenediamine or theophylline. Theobromine 5 grains (0.35 Gm.) and theobromine with sodium salicylate 7½ grains gave almost identical results and were distinctly less effective than other preparations (table 2).

Caffeine Derivatives.—Caffeine citrate was the only preparation used. The drug is apparently of little value in angina pectoris, for only one patient showed questionable benefit from its use. No patient had more attacks while taking this drug, although clinical experience has shown that in an occasional individual pain may develop on drinking coffee.

Combinations of Sedatives with Purines.—Two preparations were used, theobromine with phenobarbital (theominal) and theophylline mono-ethanolamine with amytal (theamin and amytal). The amount of work that patients could do after taking these preparations was essentially the same as after the use of the purine derivative without the added sedative (table 3). From the practical standpoint the use of sedatives is of distinct value in the treatment of angina pectoris, for it makes the pain easier to bear. It is inadvisable, however, to combine the two drugs in a single tablet or capsule, for the optimum dosage of each ingredient varies for different patients.

COST OF MEDICATION

In most patients the benefits of purine medication disappear soon after the drug is omitted. It is necessary therefore to administer the preparations for long periods and at least three or four times a day. Under such circumstances the cost of medication becomes an important factor. Theobromine with sodium acetate is the least expensive of the effective purine preparations. For hospital use the powder can be purchased from chemical houses in 5 pound lots [6] and made into tablets resulting in a cost of approximately 16 cents for one week's supply (thirty doses) as compared to a cost of from 60 cents to $1.14 for other preparations. In our experience the cost of 100 capsules of theobromine with sodium acetate on prescription usually retails for considerably less than other preparations.

SUMMARY AND CONCLUSIONS

1. The comparative value of six theophylline, four theobromine and one caffeine preparation in the treatment of angina pectoris was determined in seventeen patients by using the usual clinical methods and also by measuring the amount of work under standardized conditions which could be done before inducing heart pain.

2. The optimum dosage was usually the maximum amount that could be given without causing severe gastric distress.

3. Not all patients respond to purines. The sodium acetate derivatives of theophylline and theobromine were the most effective preparations. Patients who did not respond to these drugs usually showed a good response to theophylline with calcium salicylate, which was the next best preparation.

Theophylline, theophylline with ethylenediamine, theophylline mono-ethanolamine, theophylline with methyl glucamine and theobromine with calcium salicylate were about equally effective but were less so than the aforementioned preparations.

Theobromine and theobromine with sodium salicylate were distinctly less effective, while caffeine citrate was of little or no value.

4. Sedatives are of value in the treatment of patients with angina pectoris, but their combination with a purine does not result in an increased exercise tolerance.

5. Theobromine with sodium acetate is by far the least expensive of the effective purine preparations.

371 Commonwealth Avenue.

6. The theobromine with sodium acetate used in this study was purchased from Merck & Co.

TULAREMIA, PULMONIC FORM

REPORT OF FOUR RECOVERIES

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It has been only fifteen years since Edward Francis [1] described tularemia, a new disease in man. Since that time it has been widely recognized in all parts of the country. The ulceroglandular form is quite common in eastern Montana, where the wood tick Dermacentor andersoni and the jack rabbit are prevalent. We see relatively few cases due to the skinning of rabbits, since they are little used for food in this locality. Most of our cases are associated with tick bite or occur in the handling of tick-infested sheep. The incidence of infection varies greatly and seems to coincide with the rise and fall of the jack rabbit population. An epizootic of tularemia among the rabbits seems to kill off most of them and there is relative freedom from human tularemia for a few years until it develops in a new generation of rabbits.

The present report is based on a group of cases, all seen in the spring of 1933 during the lambing season. All were associated with handling sheep and with tick bites. It was thought that the unusually wet spring made the handling of the sheep more hazardous and that they were most likely due to contact with tick excreta in the wet wool. In none of these patients was there any history or sign of primary ulcer or glandular involvement.

REPORT OF CASES

CASE 1.—*Tularemic pneumonia with meningo-encephalitis.* D. C. F., aged 35, a sheep man, of excellent habits, married, the father of two children who are alive and well, had always been well except for a six months stay in a sanatorium in Scotland in 1907 for suspected pulmonary tuberculosis. No positive diagnosis was made. He had acute appendicitis and an appendectomy in 1926. He also was ill for a few days with mild influenza in 1932.

He went to a sheep camp for lambing operations May 1, 1933. During the following week he was exposed to much cold, wet weather and loss of sleep. Rain made it necessary to handle most of the sheep. They were all moderately infested with both the sheep tick Melophagus ovinus and the wood tick Dermacentor andersoni. As is the custom, he skinned dead lambs

Dr. Herman died, April 15.

Assistance was rendered by the technician and staff of Holy Rosary Hospital.

1. Francis, Edward: Tularemia, a New Disease in Man, J. A. M. A. **78:** 1015 (April 8) 1922.

and tied the skins on the backs of orphan lambs that their foster mothers would own them. I am told that tularemia in sheep may cause stillbirths; hence these lambs may have been the source of his infection. He was bitten by a tick May 5. This occurred on the forehead and was not followed by any ulcerous or glandular involvement. He became ill May 10, at which time he had a shaking chill, high temperature, general aching and drenching sweats. He was seen by one of us on the third day of his illness and was thought to have influenza. He continued to do badly, however; severe pleuritic pain in the left side of the chest, bloody sputum and signs of beginning consolidation in the left apex developed on the sixth day of his illness. He was admitted to the hospital the next morning, with a temperature of 104 F. (40 C.), pulse 110 and respirations 30.

On physical examination the patient was obviously very ill, with anxious facies and grunting respiration. There was no mark or ulcer at the site of the tick bite or elsewhere. The lymph glands were nowhere enlarged or tender. The eyes, ears, nose and throat were normal. The expansion of the chest was limited on the left. The heart was not enlarged, and the heart tones were moderately rapid but of good quality. There were no murmurs. The blood pressure was 110 systolic, 80 diastolic. The lungs showed beginning dulness at the left apex with pleural friction in the left axilla. The breath sounds were bronchovesicular at the left apex, where there were many crackling râles. The abdomen was distended and tympanitic. The spleen could not be felt, though there was some tenderness in this region. The reflexes were negative. The neck was not stiff and there was no Kernig sign. Examination of the urine was negative and the white blood cell count was 8,150. X-ray examination of the chest showed a bandlike area of consolidation at the left apex (fig. 1 *A*).

His temperature fell by lysis for the first three hospital days, then rose again as an irregular intermittent type, ranging from 99 to 105 for fifteen days, then falling by lysis reaching normal on the twenty-third day and remaining so until discharge (fig. 2). His pulse at first was relatively slow in relation to his temperature until the eleventh day, varying from 80 to 110 and later going as high as 136. It remained elevated to from 100 to 120 for two weeks following a normal temperature. The blood pressure remained low throughout the disease, and the pulse was distinctly dicrotic. Pneumonia extended rather slowly, involving the greater portion of the left upper lobe and a portion of the right middle lobe (fig. 1 *B*). The sputum was intermittently bloody, with a slight odor until the twentieth day of the disease. Resolution also was very slow, and the lungs, which were checked frequently by x-ray examination, were not reported as practically clear until the thirtieth day (fig. 1 *C*).

On the twentieth day of the disease we noted that he seemed drowsy and had a rather marked coarse tremor of the hands. This became more marked and made it necessary to catheterize and feed him. The blood urea taken at this time was 75 mg. per hundred cubic centimeters. Five days later there was more marked somnolence; the tremor had become so bad that he could not hold anything in his hands, and definite rigidity of the neck was noted for the first time. A lumbar puncture revealed a turbid spinal fluid with some increase in pressure. The cell count of this fluid was 670, globulin one plus, differential lymphocytes 96 per cent, polymorphonuclears 4 per cent. A fibrin web formed on standing. No organisms could be found. The spinal fluid sugar was 0.008 gram per hundred cubic centimeters. The Wassermann reaction was negative. The colloidal gold curve was 1122343000. We then did a daily spinal drainage for five days with marked clinical improvement, the cell count falling on successive days as follows: 500, 300, 232, 120, 60, 15. On this basis we made a diagnosis of meningo-encephalitis.

When first seen, because of his exposure to ticks, blood was taken for tularemia tests. It was reported negative for tularemia May 18, the eighteenth day of illness, as well as negative for typhoid and undulant fever. A second test taken ten days later was reported by Dr. Francis of the National Institute of Public Health as follows: Tularemia was positive by complete agglutination in dilutions of 1 : 160 and partial in dilutions of 1 : 320. Cross agglutination with Brucella abortus was present but serum was classed as tularemia by the agglutination absorption test and by the more rapid agglutination of Bacterium tularense. A third test June 9 was identical. The urine remained normal throughout the course of the disease except for an occasional small amount of protein. The white blood cell count varied between 5,600 and 10,750, tending to rise late in the illness. The Schilling count, May 31, was as follows: band forms 18 per cent, segmented forms 47 per cent, lymphocytes 31 per cent, eosinophils 1 per cent, monocytes 3 per cent. The sputum was repeatedly negative for acid-fast bacilli. Inoculation of it into a guinea-pig, done when the patient was practically well, was negative. From the meningo-encephalitis he made a slow but rather uneventful recovery. He left the hospital on the thirty-ninth day of illness and when next seen, September 1, had gained 20 pounds (9 Kg.). He still, however, felt weak and noted palpitation of the heart and some dyspnea on exertion. He has continued to gain in strength and in January was only slightly dyspneic. X-ray examination of the chest was negative.

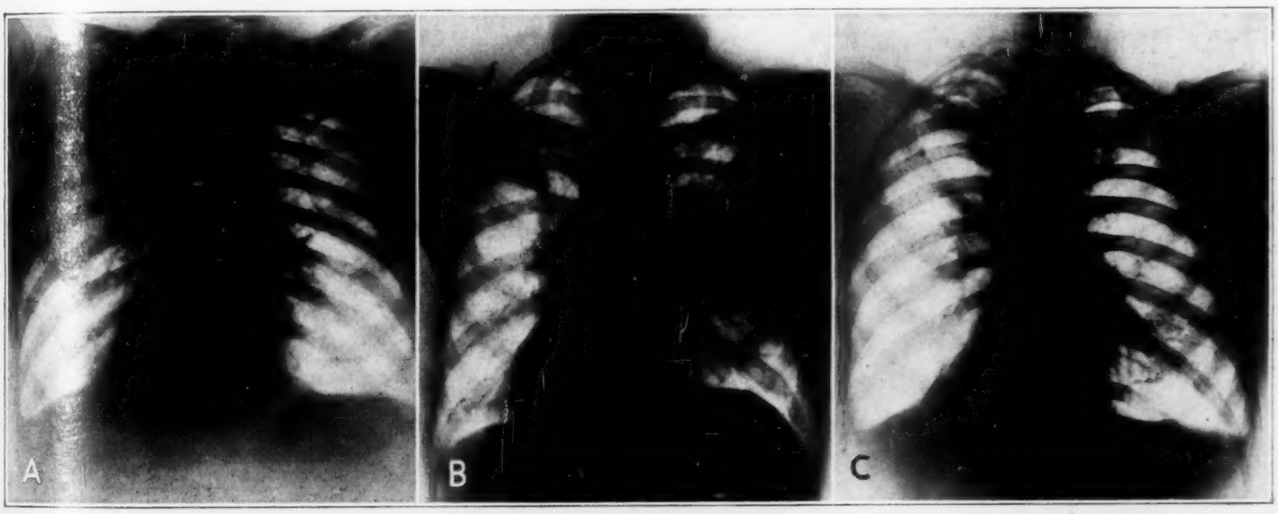

Fig. 1 (case 1).—Appearance (*A*) on admission, showing involvement of the left upper lobe; (*B*) fifteenth hospital day, showing partial resolution of the left upper lobe and involvement of the right middle lobe; (*C*) thirtieth hospital day, showing complete resolution.

CASE 2.—*Tularemic pneumonia, aphthous stomatitis.* J. E. P., a farmer, aged 37, married, of good habits, was admitted to the hospital May 27, 1933, ten days after the admission of the first patient. His condition so closely simulated the first case that little difficulty was experienced in diagnosing it.

The patient's past health had always been good. The family history was negative for cancer and tuberculosis. He gave a history of having been bitten by ticks under the left arm and in the left groin twenty-four days previous to his admission to the hospital. A week later he became ill with high fever, cough and marked general aching. He was seen by another physician, who thought he had influenza. He continued to feel

bad, staying in bed most of the time. During this time headache and tinnitus were very troublesome. His temperature was apparently quite irregular, though no records were kept. He was first seen by us on his admission to the hospital. He had been ill seventeen days and was complaining of pain in the right side of the chest, which was worse when he breathed. He was extremely weak and dizzy. He coughed frequently, raising

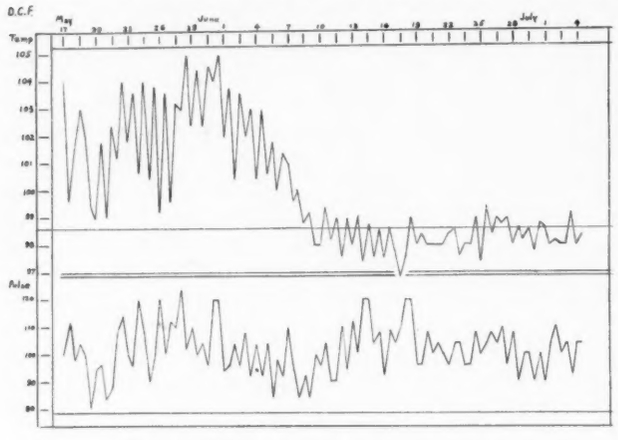

Fig. 2.—Temperature and pulse in case 1.

a tenacious bloody sputum with slight odor. The temperature was 103.4 F. (39.6 C.), pulse 110, respiration rate 32. The eyes, ears, nose and throat were normal except for moderate pyorrhea and moderate deafness, which he said was made worse by his illness. The latter was of the conduction type. There was no evidence of tick bite, nor were any of the superficial lymph glands enlarged. The chest was emphysematous in type. The lungs showed dulness on percussion over the left upper and right middle lobes. The breath sounds over these areas were bronchovesicular and there were many moist râles. The heart was not enlarged; its tones were of good quality and there were no murmurs. The blood pressure was 110 systolic, 80 diastolic. The abdomen was soft. The spleen was not palpable or tender. The reflexes and sensations were reported as normal.

X-ray films of the chest showed a picture very similar to that of the previous patient. Figure 3 shows quite well the evolution of the pneumonia. As will be noted by the dates of the pictures, his condition changed very slowly. While never so desperately ill as patient 1, he was ill longer. Figure 4 shows the temperature and pulse curves.

The white blood cell count taken May 27 was 9,000 and again on June 18 it was 8,950. The Schilling count was: small lymphocytes 22 per cent, segmented forms 31 per cent, band forms 38 per cent, eosinophils 3 per cent, juveniles 6 per cent. Blood taken on the day of his admission to the hospital was reported positive for tularemia in dilutions of 1 : 1,280 and negative for undulant fever. The urine remained normal except for an occasional trace of protein. The sputum was repeatedly negative for acid-fast bacilli. June 13 a marked aphthous stomatitis developed, which gave him considerable trouble for about a week. Guinea-pig inoculation of the sputum June 17 was negative. He was discharged, July 10, after a stay of forty-four days in the hospital. A roentgenogram of the chest taken a few days before dismissal still showed considerable involvement (fig. 3 *C*) even though the pulse and temperature had been normal for ten days. After returning home he continued to gain slowly, except for a fever of six days' duration that forced him to stay in bed. He was last seen in the office on August 14, when he was feeling fine, though still weak. He had gained 20 pounds (9 Kg.). An x-ray film taken on this date showed almost complete clearing except for a rather marked fibrosis over the areas that had been involved.

CASE 3.—*Tularemic pneumonia.* D. O., a white man, aged 50, single, a sheep herder, admitted to the hospital May 5, 1933, complained of pain in the chest, headache, loss of appetite and strength and moderate cough. He stated that he had been well until a week before admission, at which time headache, malaise and general aching developed and he thought he had the "flu." He had no chill but felt feverish. After two days he was forced to go to bed. He was alone in the sheep camp and had to care for himself. He had been bitten by ticks several times in the preceding weeks but none of the bites festered or gave any trouble, and he had not noticed any swollen glands.

The patient was well developed and weighed 175 pounds (79 Kg.). His face was flushed and he seemed dull and apathetic. There was occasional coughing, with scanty tenacious sputum. The temperature was 101 F. (38.3 C.), pulse 90, respiration rate 18. The tongue was clean and moist. The tonsils were not enlarged. The neck was flexible. The thyroid was not palpable. There were no enlarged glands. The heart was not enlarged. There were no murmurs. The blood pressure was 110 systolic, 80 diastolic. The lungs were resonant throughout on percussion. At the right base the breath sounds were increased but not definitely tubular. Over this area there were many moist râles. The abdomen was distended and tympanitic, and there was slight generalized tenderness throughout. The reflexes were physiologic and there was no stiff neck or Kernig sign. Careful inspection of the skin showed no ulceration or marks from tick bite, and the lymph glands were nowhere enlarged. The white blood cell count was 10,800. The urine was normal.

The patient remained in the hospital from May 5 to June 7. During the first two weeks of his stay he had an irregular temperature varying from 101 F. (38.3 C.) to 104 F. (40 C.), the pulse ranging between 90 and 110 and the respiration rate from 18 to 38. The area at the right base developed slowly until definite consolidation with pleural friction was present. No x-ray films were taken. After two weeks he slowly improved.

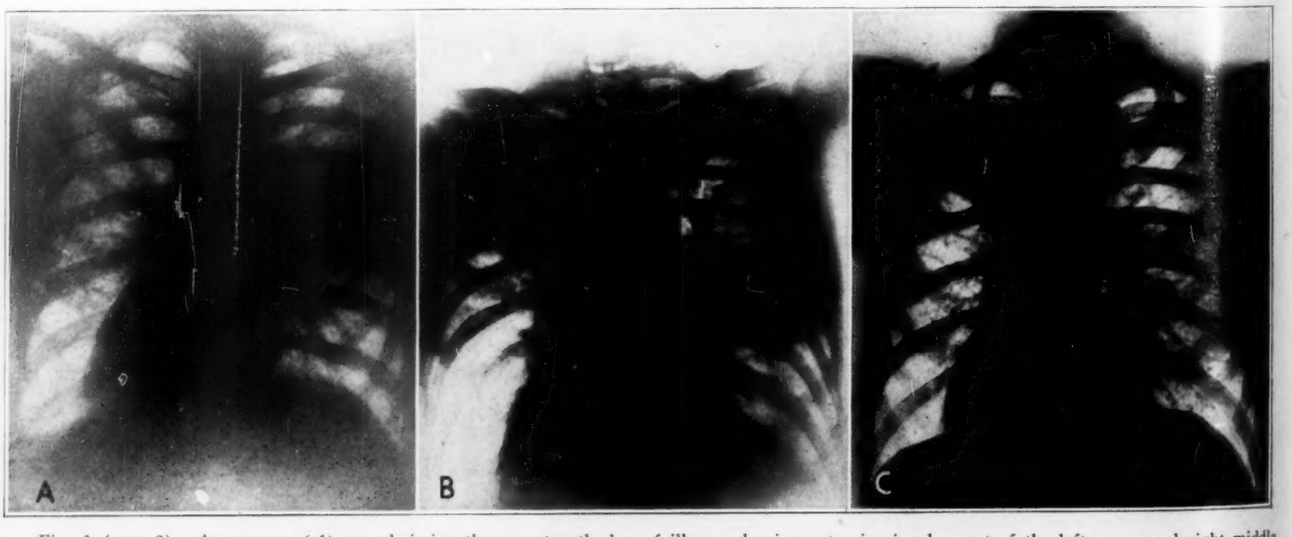

Fig. 3 (case 2).—Appearance (*A*) on admission the seventeenth day of illness, showing extensive involvement of the left upper and right middle lobe; (*B*) thirtieth day of illness; (*C*) on discharge, the sixty-second day of illness.

Because of the atypical course of the pneumonia and the history of possible exposure to tularemia, blood was sent to the Montana State Board of Health and was reported positive for tularemia in dilutions of 1 : 320.

After discharge from the hospital, he gradually gained strength but when last seen, two months later, still felt a bit weak and a little breathless on exertion.

CASE 4.—*Tularemic bronchitis with small pleural effusion.* L. H., a man, aged 31, single, a rancher, regarded himself as perfectly well until the onset of his present illness. His family history was negative for tuberculosis. His personal habits were good. He gave a history of pneumonia in childhood and again in 1927.

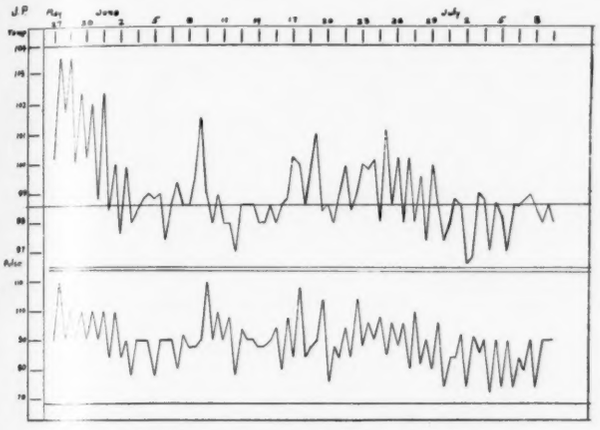

Fig. 4.—Temperature and pulse in case 2.

He had been caring for sheep during the lambing season and stated that he had been bitten by ticks almost daily, removing from four to five from his body each day since March 28. Some of these bites festered a little but there was no definite ulcer anywhere, nor had he noted any enlarged or tender glands. He began to feel weak and lame May 10 but continued to work until the 18th, when he felt feverish and had a bad headache. During this time he had had a severe cough with streaks of blood in the sputum, which was scanty. There was slight pain in the right axilla on breathing.

On examination the patient was moderately ill, with frequent cough and marked weakness. The temperature was 101.2 F., pulse 96, respiration rate 20. The tonsils had been cleanly removed. The eyes, nose and throat were otherwise normal. The chest expansion was limited on the right. The lungs were resonant throughout except at the right base, where there was a narrow band of flatness. The breath sounds were vesicular. Scattered through both bases were many dry and whistling râles, especially on coughing. These seemed more numerous on the right. A friction rub could not be detected. The heart was not enlarged, and there were no murmurs. The blood pressure was 112 systolic, 84 diastolic. The abdomen was scaphoid. There was no tenderness and the spleen could not be felt. There was evidence of an old compression fracture of the first lumbar vertebra. The reflexes were normal. X-ray films of the chest showed increased bronchial markings on the right with a small amount of pleural effusion (fig. 5). The white blood cell count was 6,500 and the urine was normal. Blood taken May 29 was positive for tularemia in dilutions of 1 : 160 and negative for undulant fever. A second sample, taken June 9, was reported by Dr. Francis of the National Institute of Health as follows: positive agglutination for B. tularense in a dilution of 1 : 320; positive for Brucella abortus in a dilution of 1 : 320. The serum was classed as tularemia because of faster agglutination and because of the agglutinin absorption test.

Fig. 5 (case 4).—Tularemic bronchitis with pleural effusion.

He remained in the hospital only four days. During his hospital stay, the temperature fell to about 100 F. and was normal when he was discharged.

In a month the patient was well.

COMMENT

A search of the literature reveals only twenty patients who have recovered from tularemic pneumonia. We add the records of three more, one of which was complicated by involvement of the central nervous system. This complication has resulted in a fatal outcome in all the previous reports that we have seen.

The treatment received by these patients was largely symptomatic with the addition of intravenous injections twice a day of sodium salicylate 1.2 Gm., dissolved in

Tularemic Pneumonia

	Fatal	Recovered	Source	Ulceroglandular Onset
Verbrycke, J. R., Jr.: J. A. M. A. **82**: 1577 (May 17) 1924	1	0	Rabbit	Yes
Simpson, W. M.: Arch. Path. **6**: 553 (Oct.) 1928	1	0	Rabbit	Yes
Barbon, Richard, and Berdez, George: J. A. M. A. **90**: 1369 (April 28) 1928	1	0	Rabbit	Yes
Bunker, C. W. O., and Smith, E. E.: U. S. Naval M. Bull. **26**: 901 (Oct.) 1928	1	0	Rabbit	Yes
Francis, Edward: J. A. M. A. **91**: 1155 (Oct. 20) 1928	3	0	Fly bite, rabbit, rabbit	Yes, yes, yes
Permar, H. H., and Maclachlan, W. W. G.: Ann. Int. Med. **5**: 687 (Dec.) 1931	1	0	Rabbit	No
Sante, L. R.: Am. J. Roentgenol. **25**: 24 (Feb.) 1931	0	1	?	No
Massee, J. C.: J. M. A. Georgia **20**: 66 (Feb.) 1931	1	0	Rabbit	Yes
Tureen, L. L.: J. A. M. A. **99**: 1501 (Oct. 29) 1932	0	1	Rabbit	Yes
Foulger, Margaret; Glazer, A. M., and Foshay, Lee: J. A. M. A. **98**: 951 (March 19) 1932	1	0	Rabbit	Yes
Gudger, J. R.: J. A. M. A. **101**: 1148 (Oct. 7) 1933	1	0	Rabbit	No
Gundry, L. P., and Warren, C. G.: Ann. Int. Med. **7**: 837 (Jan.) 1934	1	0	Rabbit	Yes
Bernstein, Alan: Arch. Int. Med. **56**: 1117 (Dec.) 1935	3	0	1 ?, 2 and 3 rabbit	Skin and gland in 3
Flinn, L. B.: Delaware State M. J. **7**: 219 (Nov.) 1935	0	1	Not given; Foshay serum used	Yes
Kavanaugh, C. N.: Arch. Int. Med. **55**: 61 (Jan.) 1935	4	12	Rabbits	Yes 9, no 7
Blackford, S. D.: J. A. M. A. **104**: 891 (March 16) 1935	3	4	Rabbit 3; ? 2; squirrel 1; oppossum 1	Yes 2, no 5
Sloan, L. H.; Freedberg, A. S., and Ehrlich, J. C.: J. A. M. A. **107**: 117 (July 11) 1936	0	1	Rabbit	No
	22	20		

Nervous System Involvement

			Source	Involvement	
Hartman, F. W.: Am. J. Path. **8**: 57 (Jan.) 1932	1	0	Rabbit	Encephalitis	Yes
Bryant, A. R., and Hirsch, E. F.: Arch. Path. **12**: 917 (Dec.) 1931	1	0	Rabbit	Leptomeningitis	Yes
Haizlip, J. O., and O'Neil, A. E.: J. A. M. A. **97**: 704 (Sept. 5) 1931	1	0	Rabbit	Meningitis	Yes
Francis, Edward: Tularemia, in Cecil, R. L.: Textbook of Medicine, Philadelphia, W. B. Saunders Company	5	..	?	Severe meningeal symptoms	?
	8	0			

30 cc. of distilled water. Whether this therapy had anything to do with our mortality we are not prepared to say, but it was our impression that this measure seemed to make our patients less toxic.

In case 1, daily spinal drainage was carried out after meningeal symptoms developed until the spinal fluid was clear. This measure we feel sure was definitely beneficial. After each tap the patient became mentally much more alert.

Dyspnea on exertion and general weakness predominated for some months after recovery and would lead one to believe that a toxic myocarditis was the usual sequela.

Our experience as to the frequency of clinical pulmonary involvement in ulceroglandular tularemia does not coincide with that of Blackford,[2] as pulmonary complications were not present in any of our cases of the ulceroglandular type, nor was either ulcer or glandular involvement present in any of our pulmonic cases.

We do feel that the portal of entry in these cases was most likely through the skin, although it is possible that the patients may have eaten food contaminated by the fingers, the damp wet weather making inhalation of infected material very unlikely.

Any atypical pneumonia with a relatively low white blood cell count and slow evolution of lung changes should cause one to suspect tularemia. It must also be considered in pleurisy with effusion.

SUMMARY

Three patients recovered from tularemic pneumonia; one case was complicated by encephalomeningitis. One patient with tularemic bronchitis with small pleural effusion also recovered.

CORONARY THROMBOSIS VS. DISSECTING ANEURYSM IN DIFFERENTIAL DIAGNOSIS

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AND
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The clinical study of coronary thrombosis is one of the achievements of American medicine. First described by Herrick[1] in 1912, this condition has received so much attention in the past ten years that the diagnosis is probably rarely missed nowadays.

On the other hand, although dissecting aneurysm of the aorta was described more than 200 years ago, it is not a condition with which the average clinician is sufficiently familiar. Peery[2] has recently reported four cases, with a good discussion of the pathology. Interest in this subject has been active in Atlanta in recent years. Agnor[3] has made a careful review of the literature, and McGeachy and Paullin[4] have published a clinical paper. According to these authors, about 500 cases have been reported but only nine were diagnosed during life. McGeachy and Paullin added three cases in which they recognized the condition at Grady Hospital.

2. Blackford, S. D.: Pulmonary Manifestations in the Human: A Clinical Study, J. A. M. A. **104**: 891 (March 16) 1935.

From the Emory University School of Medicine.

1. Herrick, J. B.: Clinical Features of Sudden Obstruction of the Coronary Arteries, J. A. M. A. **59**: 2015 (Dec. 7) 1912.
2. Peery, T. M.: Dissecting Aneurysms of the Aorta, Am. Heart J. **12**: 650 (Dec.) 1936.
3. Agnor, E. B.: Dissecting Aneurysm, J. M. A. Georgia **26**: 108 (March) 1937.
4. McGeachy, T. E., and Paullin, J. E.: Dissecting Aneurysm of the Aorta, J. A. M. A. **108**: 1690 (May 15) 1937.

REPORT OF CASE

A fat lawyer, aged 61, who had lived hard and worked hard, eaten hard and drunk hard, was sitting before an open fire after breakfast reading his Sunday paper. He was seized with a sudden severe pain, which caused him to cry out that something had "broken loose inside." The pain, it seems, began in the lower right quadrant of the abdomen, jumped to the lower

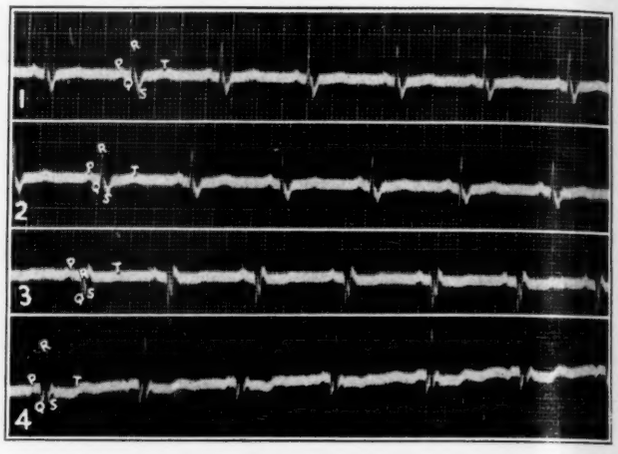

Fig. 1.—Tracing taken about two hours after the onset of pain. Although there are definite signs of myocardial damage, there is nothing to suggest coronary thrombosis.

dorsal vertebrae and then settled over the xiphoid process. From this point it radiated up over the sternum to the base of the neck on each side. There was loss of sight in the right eye but this was transitory. One of us arrived within an hour of the first pain.

The patient was yelling with pain and presented a picture of moderate shock. The area of cardiac dulness was not enlarged and no retromanubrial dulness was made out. There was a harsh to and fro murmur over the base. The right hand was blue, and blood pressure could not be obtained in that arm. In the left arm the systolic pressure was 108 and the diastolic pressure 90. The pulse was 66. An opiate was administered at once. Although the first thought was of coronary thrombosis, the absence of a pulse in the right arm suggested an embolus to the right subclavian artery. The absence of pain in the right clavicular region and arm, however, made this seem improbable. The next thought was of aneurysm or of dissecting aneurysm. The patient was carried to his bed but he was in such agony that he refused to have his clothes removed.

In the early morning hours his wife had been awakened by a nightmare, and this had disturbed his rest. He had taken a large dose of salts, which resulted in a number of watery stools. He had not been to sleep since. It was learned that he had had a systolic blood pressure of over 200 and a diastolic of about 140 for several years. About fifteen months earlier he had been sick in another city with "acute indigestion"; though his attending physician thought this was "heart trouble," he had been able to keep him in bed only two weeks. In recent months he had had several profuse hemorrhages from the nose.

Although he had been under the care of a physician at times for some years, he had never had any treatment for syphilis. His wife had never had a miscarriage and had borne him two healthy sons. This information and the absence of local signs rendered syphilitic aneurysm improbable.

After being placed in bed he complained of nausea and general abdominal distress in addition to the serious pain under the lower part of the sternum. He demanded ice water constantly and vomited at frequent intervals. Attempts at giving medicine by mouth were futile, and soluble phenobarbital, 5 grains (0.3 Gm.), was given by hypodermic. About two hours after the accident the blood pressure in the right arm was 84/64 and in the left arm 134/60. The pulse was still 66. By this time the diagnosis had been narrowed down to coronary thrombosis or dissecting aneurysm. He did not present a good picture of coronary thrombosis and yet the rarity of dissecting aneurysm caused us to favor the diagnosis of cardiac infarction.

An electrocardiogram was taken about two hours after the onset of pain. This showed marked slurring of the S waves

in leads 1 and 2, with a low T wave in all three leads. There was a deep Q wave in lead 3, with a marked splitting of the QRS. The QRS in lead 4 was also slurred and the T wave was biphasic. This was interpreted as evidence of an incomplete bundle branch block with considerable myocardial damage, probably the result of the preceding hypertension. There was nothing in the tracings to indicate coronary thrombosis. Although in some cases it is several hours after the infarction before definite signs of coronary thrombosis appear in the electrocardiogram, when the onset is as sudden and severe as in this case signs of myocardial anoxemia at least should be present two hours later. Of course, too, coronary thrombosis could not interfere with circulation to the right arm. We therefore concluded that the diagnosis was dissecting aneurysm.

Aminophylline, 1 Gm., given twice intravenously, was without effect. N-methyl-cyclohexenylmethylmalonylurea, also given intravenously, in small amounts put him to sleep with stertorous respiration, but only for a few minutes at a time. At 2:20 p. m., oxygen by nasal catheter was started. The restlessness and constant retching demanded extreme measures. At 4:45 Dr. Edgar D. Shanks, who had been called in consultation, advised dilaudid hydrochloride, one-eighth grain

Fig. 2.—The final rupture into the pericardium is emphasized by the finger. The irregular rupture into the media on the under surface of the arch is visible, as well as the dissection of the innominate and right common carotid.

(0.008 Gm.), with atropine, 1/75 grain (0.0009 Gm.), by hypodermic injection. At this time blood pressure in the left arm was 130/88. At 7:20, respiration being only 10, 25 per cent solution of pyridine betacarbonic acid diethylamide was given by hypodermic injection. This was repeated three hours later, when the respiration rate dropped to 8. He was awake again within an hour complaining of severe pain in the epigastrium.

At 1 a. m. dilaudid hydrochloride, 1/32 grain (0.002 Gm.), was repeated. In spite of this he woke up several times complaining of pain. The abdomen became greatly distended with gas. At 8:50 the blood pressure in the right arm was 120/80 and in the left arm 170/100. At this time the temperature was 100.4 and the pulse, which had been slow before midnight, was up to 100. He was very nervous and restless, coughing frequently during the morning and vomiting occasionally. At 2:30 p. m. the blood pressure in the right arm was 144/104 and in the left arm 180/126. In contrast to the excruciating pain of the first day, he was relatively comfortable, and it seemed that if the nausea, vomiting and "gas" could be controlled he would be much better. A small enema resulted in the expulsion of a large amount of flatus. After this he began to perspire freely and to complain of epigastric pain. The pulse varied from 100 to 112.

At 8:45 p. m. the blood pressure in the right arm was 136/108 and in the left 176/96. It seemed that the large amounts of ice water he had been drinking might have contributed to the abdominal distress, but it was difficult to limit the ice water. The second day the patient had been more comfortable than the first and we thought that perhaps he would recover. He had received great relief from the first enema and, the abdomen being tense and tympanitic, we advised another. Just as this was started he gasped, and the face and neck turned purple. When examined a few moments later the heart sounds

Fig. 3.—The ascending aorta has been opened to show the inner aspect of the initial rupture.

were inaudible. The oxygen tube was still in the nasopharynx and bubbles of gas escaped from his lips; a 25 per cent solution of pyridine betacarbonic acid diethylamide was injected several times, twice into the heart, but without effect.

Although improvement the second day had caused us to waver a little in the diagnosis of dissecting aneurysm, the nature of the death convinced us that this diagnosis had been correct and that a second rupture had occurred.

AUTOPSY

The postmortem was performed two and a half hours after death. The contents of the abdomen were without interest

Fig. 4.—Posterior view of the abdominal aorta showing the clean dissection of the media of almost the entire vessel below the level of the superior mesenteric trunk; it then extends partly down the left common iliac and all the way down the right common iliac.

except that the intestine was greatly distended with gas. When the pericardium was nicked, bloody fluid gushed up several inches. A blood clot formed a cast of the heart. The heart, though covered with fat, was not enlarged, and the coronary arteries looked normal. On the under surface of the arch of the aorta there was a transverse rupture into the media about 2 cm. in length. The dissection of the media had progressed so

that the thoracic aorta was practically a tube within a tube, and the final rupture was through a slit 8 mm. long into the pericardium. The dissection extended up the right common carotid artery as far as we could follow it. The superior mesenteric trunk was also dissected down to where it was cut off, and the dissection of the descending aorta went down the back of the aorta to its bifurcation, extending down 3 cm. on the posterior surface of the right common iliac and below where the left common iliac was cut. Microscopic examination by Dr. Warren B. Matthews confirmed the diagnosis of medial necrosis.

COMMENT

The long history of hypertension, the agonizing, tearing pain as though something had been "torn loose inside," the temporary loss of vision, the nausea, the vomiting, the shock, the murmurs at the aortic region and the absence of pulsation in one extremity, the period of relative comfort with the dramatic death on slight effort, and the rupture into the pericardium in this case were all typical of dissecting aneurysm of the aorta, as McGeachy and Paullin have recently pointed out.

The diagnosis of dissecting aneurysm of the aorta should be made without difficulty, in most cases at any rate, if it is taken into consideration in differential diagnosis. It is important to make this diagnosis; for example, at the January meeting of the Southern Section of the Otological, Rhinological and Laryngological Society two cases were reported in which bronchoscopic examination had been done to determine the cause of dyspnea in cases of dissecting aneurysm, with resultant rupture into the trachea. Although it would appear that the condition is rapidly fatal in perhaps 99 per cent of cases that come to autopsy, unquestionably it is not necessarily fatal: it may well be that recovery occurs much more often than this, but because there is no autopsy in the case when death occurs years later, the diagnosis is lost. The most widely known case of recovery after dissecting aneurysm is that so beautifully pictured in successive editions of MacCallum's Text-Book of Pathology;[5] in this case a second rupture at a lower level from the pathologic lumen back into the aorta allowed the blood to be carried in two channels, and the second one was lined with endothelium at the time of death from an independent cause some years after the original accident. In spite of the rarity of the condition, therefore, it is exceedingly important to make the diagnosis to prevent too much being done and to keep the patient as comfortable and quiet as possible in the hope that he will recover with a double-barreled aorta.

SUMMARY

Dissecting aneurysm of the aorta occurred in a high-strung, hypertensive, fat man, aged 61; the diagnosis was definitely made before autopsy. Death occurred from rupture of the dissecting aneurysm into the pericardium thirty-six hours after the original break through the intima.

The diagnosis of dissecting aneurysm can be made and should be made in order to improve the patient's very slim chance of recovery.[6]

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5. MacCallum, W. G.: A Text-Book of Pathology, Philadelphia, W. B. Saunders Company.

6. Since this paper was submitted, several more correct clinical diagnoses have been reported. We wish to append additional references:
Glendy, R. E.; Castleman, Benjamin, and White, P. D.: Dissecting Aneurysm of the Aorta: A Clinical and Anatomical Analysis of Nineteen Cases (Thirteen Acute) with Notes on the Differential Diagnosis, Am. Heart J. **13**: 129 (Feb.) 1937.
Roesler, Hugo; Gifford, U. G., and Betts, W.: Dissecting Aneurysm of the Aorta Correctly Diagnosed, with Description of a Sign Heretofore Not Mentioned, Am. Heart J. **13**: 426 (April) 1937.

Clinical Notes, Suggestions and New Instruments

ROENTGEN STUDY OF A NONFATAL CASE OF BILATERAL TULAREMIC PNEUMONIA TREATED WITH SPECIFIC SERUM

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The clinical and roentgenologic aspects of the pulmonary manifestations of tularemia have been discussed by us in previous communications.[1] In our series of thirty-five unselected cases of tularemia, four of the seven patients with proved consolidation survived the illness. Tularemic pneumonia seemed more frequent and less fatal than previously recorded. However, the process has been unilateral in the nonfatal cases reported. In the present instance the patient recovered from bilateral tularemic pneumonia after administration of antitularense serum. The pulmonary changes in this case have been studied over a period of two years by twenty-nine roentgenograms.

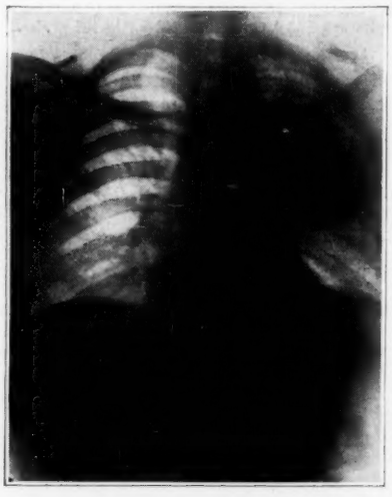

Fig. 1.—Appearance Nov. 2, 1934, fifteenth day after onset of tularemia.

REPORT OF CASE

A Negro, aged 43, a gardener, was admitted to the hospital Nov. 1, 1934, in the afternoon in a semicomatose condition. He had been well until about two weeks previously, when a severe continuous headache, a cough and a high fever had suddenly developed. About four days before admission he had become drowsy and irrational. The patient on examination was unusually well developed and somewhat obese. No abrasion of the skin or adenopathy was found. The only abnormality noted was the presence of numerous fine râles in the left apex anteriorly without other physical signs. The rectal temperature was 103.4 F. and the pulse was 110 per minute. The urine contained a trace of albumin and from 3 to 5 red and from 3 to 5 white blood cells per high power field. The blood urea was normal. There was no anemia and the leukocyte count was

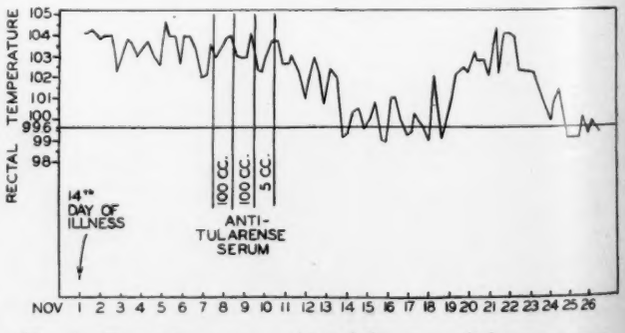

Fig. 2.—Temperature curve with relation to antitularense serum.

From the Departments of Internal Medicine and Roentgenology, University of Virginia Hospital.

1. (*a*) Blackford, S. D.: Pulmonary Manifestations in Human Tularemia: A Clinical Study Based on Thirty-Five Unselected Cases, J. A. M. A. **104**: 891 (March 16) 1935. (*b*) Archer, V. W.; Blackford, S. D., and Wissler, J. E.: Pulmonary Manifestations in Human Tularemia: A Roentgenologic Study Based on Thirty-Four Unselected Cases, ibid., page 895.

6,500 per cubic millimeter. Spinal fluid examination was negative. The diagnoses considered were (1) pneumonia of the left upper lobe, (2) tuberculosis of the left upper lobe and (3) typhoid.

The following morning stereoscopic films of the chest (fig. 1) revealed a diffuse haziness over almost the entire left side of the chest. The density was much greater in the central portion than at either the apex or the base of the lung. On the right side of the chest there was much peribronchial thickening, with increased density at the hilus. The costophrenic angle was slightly hazy on both sides and there was some elevation of the left diaphragm. In a lateral view the density on the left side was seen to be centrally located, extending anteriorly almost to the sternum. A diagnosis of a pneumonic process in the left lung was made and the roentgenologic report contained the suggestion that tularemia be considered as a possible cause of the consolidation.

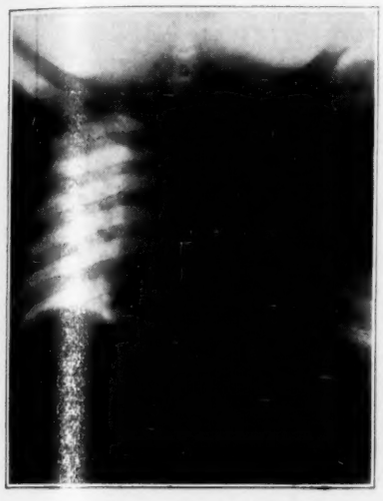

Fig. 3.—Appearance November 6.

Fig. 4.—Appearance December 18.

On admission, blood had been taken as a routine for culture, for a Widal test and for agglutinations against Brucella abortus, Bacillus proteus $X_{19}O$ and Bacterium tularense. Except for a three plus agglutination against Bacterium tularense in dilutions up to 1:20, these tests were negative when subsequently reported. After the roentgen study and agglutinations, it was ascertained that the patient had skinned a rabbit a few days prior to the onset of his illness. The antitularense agglutination reached a maximum titer of 1:640 two weeks later, but no ulcer or abnormal glands were ever found.

The only physical signs of consolidation were found in a small area of the left posterior portion of the chest for a few days shortly after admission. The temperature record during the febrile phase in the hospital is presented with relation to the specific therapy in figure 2. As soon as the fever disappeared the patient made a good convalescence clinically, gaining strength and weight. He was not allowed up, however, until three weeks later, and he was not discharged until he had been afebrile for four weeks because of the persistence of roentgenologic signs in the left lung. His subsequent progress was followed by outpatient visits Jan. 2, Feb. 16 and March 18, 1935, during which interval he gained much more strength and 26 pounds (12 Kg.). He resumed light work March 26 and returned by request Dec. 29, 1936, for roentgen study. He reported that for more than a year he had been feeling as "well as ever."

To follow the course of the pulmonary changes, roentgenograms of the chest were made almost daily during the febrile stage of the disease, twice a week during the rest of the period of hospitalization and on each subsequent outpatient visit. The original film, Nov. 2, 1934 (fig. 1), has been discussed. A definitive pneumonic process in the right side of the chest was discernible November 6 (fig. 3). Then the right side of the chest cleared gradually and the density on the left decreased, but even on December 18 (fig. 4) there was still much haziness on the left side, simulating a tuberculous pneumonia. In the films taken March 18, 1935 (fig. 5), the left side of the chest was very much clearer. When the patient returned two years after discharge, Dec. 29, 1936 (fig. 6), the stereoscopic films were thought to be within normal limits except for some questionable peribronchial thickening.

Fig. 5.—Appearance March 18, 1935.

Fig. 6.—Appearance Dec. 29, 1936.

COMMENT

The contact history, the clinical course and the agglutinations substantiate the diagnosis of tularemia in this case. The absence of ulcers and abnormal glands is but further evidence in favor of Gudger's contention[2] that pulmonary lesions are apt to be prominent in the typhoidal type of the disease.

The most striking fact in this case is that the patient survived bilateral tularemic pneumonia following the administration of antitularense serum (Foshay). Recovery might have taken place in any event, but the gradual and prolonged decline in the temperature curve after the use of the serum certainly suggests that it was of value. Since the fever in tularemia is ordinarily sustained, its recurrence before final disappearance would seem to indicate that its first decline was not spontaneous but rather due to serum therapy. The pulmonary changes could not have been followed accurately by the physical signs but were demonstrated satisfactorily by the serial films. The entire course of the pneumonic process on the right and the very slow resolution of the pneumonia already developed on the left were observed. There was a gradual but final complete absorption without marked residual change. At certain stages the appearance of the left lung was indistinguishable from that of a tuberculous consolidation.

SUMMARY

A patient with bilateral tularemic pneumonia, treated with antitularense serum, made a complete clinical recovery. The major radiologic changes in the chest were followed over a period of two years by serial roentgenograms. The extensive roentgenologic signs disappeared much more slowly than did the clinical symptoms.

University of Virginia Hospital.

2. Gudger, James: Tularemic Pneumonia, Report of Case, J. A. M. A. **101**: 148 (Oct. 7) 1933.

AN UNUSUAL CASE OF A NEEDLE FOUND IN THE HEART AT NECROPSY

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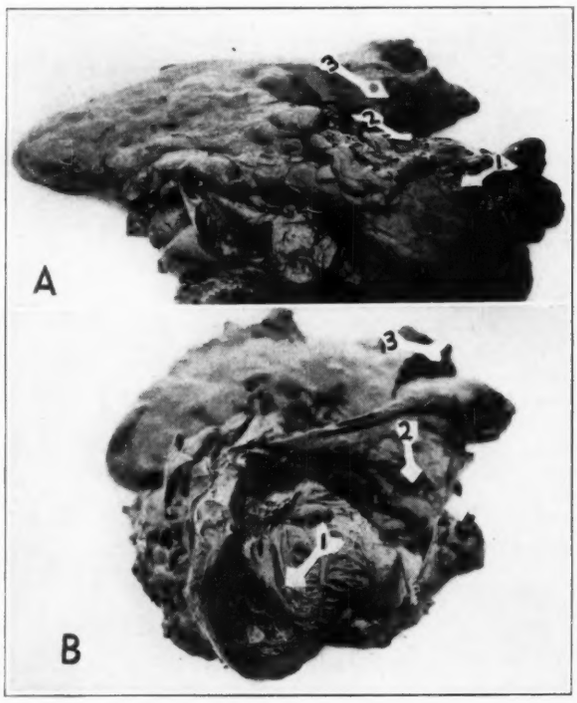
Although descriptions of foreign bodies in the heart are not common, neither are they unique. The literature contains reports of articles such as toothpicks, pins, needles, fish bones, bullets, shell fragments and in one case of a pipe stem [1] being lodged in the cardiac structure.

Bullets, especially in the post-war literature, are the foreign bodies most often reported. Keith [2] records eight cases in which fibrin-covered bullets were found free in the left ventricle.

Needles rank second in prevalence. We reviewed at least a dozen cases in the English literature, and Cope [3] described a case in which the needle was successfully removed.

A recent death caused by a needle in the heart presents several interesting features. There was no definite history of the entrance of a needle into the body; an interstitial emphysema involving the neck and chest was the presenting symptom. Pneumothorax and lung collapse followed. The needle was discovered at autopsy. We have not found an identical case in the literature.



Needle in position in the heart exactly as found at autopsy. *A* 1 shows the needle extending through the outer wall of the left ventricle and outlined against the tip of the white arrow. *B* 1 demonstrates the other end of the needle in the inner wall of the left ventricle. *A* 2 represents the blood clot on the parietal pericardium and marks the point at which the needle transfixed that tissue. *B*2 demonstrates the same point on the visceral pericardium. *A*3 and *B*3 both represent the small pleural tear that provided a mechanism for the subcutaneous emphysema noted clinically. These points together mark the course of the needle as it entered the heart.

A white man aged 70, admitted to the York Hospital, Oct. 28, 1936, had suffered from severe cough and vertigo for four years. For three weeks past there was severe pain in the left side of the chest when he coughed. Dyspnea developed. October 26, coughing ceased but the pain in the chest became worse. A physician, called October 28, noted interstitial emphysema involving the left anterolateral surface of the neck and the upper part of the chest anteriorly.

On physical examination the patient was markedly dyspneic and apparently acutely ill. We have recorded only the positive physical changes. The blood pressure was 144 systolic, 80 diastolic. The temperature was 100.6 F., pulse rate 130 and respiration rate 40. The left anterolateral portion of the neck and upper part of the chest revealed crepitation on palpation.

The left lower lobe was dull to percussion and almost silent on auscultation. Bubbling râles could be heard at the upper margin of the area of dulness. Over the left upper lobe breath sounds were exaggerated and the percussion note was hyperresonant. No cardiac abnormalities were noted, although the heart sounds were poor.

Blood studies revealed red blood cells 4,210,000, hemoglobin 75 per cent, white blood cells 19,450. The Kahn reaction was negative. The urine showed a heavy trace of albumin.

By the fourth day after admission the interstitial emphysema was disappearing. A thoracentesis on the sixth day yielded no fluid. Bronchoscopy did not reveal a malignant condition of the lung. On the seventh day the heart action became very irregular. Digitalis was given and the rhythm improved.

On the eleventh day the chest was roentgenographed. The roentgenologist reported interstitial emphysema throughout the tissues of the neck and chest wall, left pleural effusion and displacement of the cardiac shadow to the left suggesting atelectasis of the left lung. He observed that increased radiopacity at the periphery of the lung field suggested slight pneumothorax.

The following day the patient was obviously sinking. The temperature rose and the heart rate and respiration rate increased. Death occurred on the evening of the fifteenth day.

Autopsy showed that the left pleural cavity contained 375 cc. of blood. No puncture wound was found on the pleural surfaces nor in the fibromuscular tissues of the thoracic wall.

The left lung presented an aerated upper lobe except for a small V-shaped area, about 8 mm. wide, at the lower margin of the upper lobe, which overrode the pericardium. This V-shaped area consisted of pleura presenting a perforation from 2 to 3 mm. long, occurring at the margin of angulation with collapse and retraction of the underlying alveolar structure. A mechanism for production of the interstitial emphysema noted clinically here was seen. The parietal pleura covering the pericardium at a point opposite this defect presented an area of hemorrhage of approximately 6 mm., to which area thin fibrinous strands were attached. The left lower lobe was extensively collapsed.

The parietal pericardium, opposite the area of hemorrhage on the parietal pleura, was covered with coagulated blood. In the midst of the mass adherent to the visceral pericardium, which similarily was covered with coagulated blood, the end of a hard sharp object, such as that of a needle, could be palpated. This occurred at a point 5 cm. from the apex of the heart and was in general alinement with the perforation of the visceral pleural and pericardial lesions. Close inspection revealed the end of the hard object to be the broken eye end of a thin needle, now black. On dissection, the point of the needle with approximately 1 cm. of its length was found projecting into the cavity of the left ventricle after transversing the interventricular septum. The needle was 1 mm. thick and 34 mm. long.

COMMENT

On the basis of the autopsy and a subsequent history obtained from the patient's widow, it is possible to reconstruct a modus operandi which fits the clinical picture fairly well.

The widow states that the patient stepped on a sharp object in the dark with his left foot in 1932. No foreign object could be discerned in the morning, although there was some pain and tenderness of the plantar surface for some days. It would appear probable that this was the point of entrance of the needle, which gradually worked its way upward, penetrating the pleura and lodging in the heart; the pleural tear caused the interstitial emphysema, while the point in the clinical history at which the heart became irregular probably marked the beginning entrance of the needle into the cardiac structure. The fact that the needle only recently penetrated the pleuropericardial surface was confirmed by the necropsy. It must be considered, however, that the needle may have been driven into the chest recently during one of the falls incident to the patient's vertigo.

From the York Hospital.

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NASAL TUBE GASTRIC SUCTION RESULTING IN ALKALOSIS AND DEATH

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The universal acceptance and use of the constant suction gastric or duodenal tube clearly indicate the desirability and simplicity of this procedure in cases of intestinal obstruction. This life-saving measure has been a greater boon to surgery than any other recent development.

Because of the obvious benefits and the rational use of this apparatus, the dangers and complications of this therapy are apt to be overlooked. In the great majority of cases there is no occasion for fearing any complication. This has given a false sense of security to the routine and indiscriminate use of constant gastric suction. At least this seems to be the case in most surgical services.

In the occasional case this procedure presents a distinct hazard which will not allow its unguarded use. Examples of this danger are illustrated in the following two cases. In retrospect the errors in handling these cases are glaring. Nevertheless, they resulted from routine procedures used in surgical wards countless times with no untoward results.

Errors in the use of gastric suction have not been adequately emphasized in recent literature. Particularly is this true when one is dealing with a patient who has been receiving alkali for peptic ulcer. Because of this the following brief account seems justified.

CASE 1.—A man, aged 47, was referred to the Indianapolis City Hospital by Dr. T. P. Rogers Jan. 1, 1937, with a board-like abdomen, epigastric pain and vomiting. A history of peptic ulcer of three years' duration was given. During the past six months the patient had been on a strict ulcer diet (milk, crackers and alkalis). Considerable epigastric discomfort had been present for two weeks before admission, terminating abruptly with an excruciating epigastric pain seven hours before the patient was brought to the hospital.

The temperature was 103 F.; white blood cells numbered 15,100, and the urine contained a few pus and epithelial cells but was otherwise normal.

A diagnosis of perforated peptic ulcer was made. Intravenous dextrose solution was started and continued throughout the operation, which was done nine hours after perforation.

Through an upper right rectus incision a perforation 1 cm. in diameter was found in the anterior surface of the duodenum just distal to the pylorus. A simple overlapping of the anterior gastric wall was effected with interrupted silk sutures. Some 400 cc. of turbid fluid and shreds of coagulated milk was aspirated from the right lumbar gutter and pelvis. The abdomen was closed with drainage of the subcutaneous tissue. Considerable difficulty was experienced with the ether anesthesia. The patient's respirations were shallow and would cease entirely for half a minute at a time. This resulted in extreme cyanosis. Because of this only light anesthesia was given. This added to the operative time, which was slightly over one hour. (The full significance of this apnea during anesthesia was not appreciated until later when the patient went into alkalosis.)

When he was sent to the ward, continuous nasal gastric suction was instituted. The patient was allowed to have sips of water by mouth as long as the suction apparatus was working. This practice may be perfectly safe in the usual case but was distinctly harmful in this instance. Various members of his family as well as the nursing staff gave him water. The result was a more or less constant gastric lavage. On the third postoperative day the aspirated fluid reached the extraordinary amount of nearly 9 liters. Following this all gastric aspiration was discontinued.

The patient received 3,000 cc. of dextrose and saline solution daily. These were practically all isotonic and always consisted of at least a liter of saline solution.

The temperature immediately after operation was 103 F. This gradually came down to 99 on the fourth day. From there it rose rapidly to 105.6 shortly before death on the fifth day. The immediate postoperative course was uneventful. There was moderate distention the first day, which was completely controlled with enemas.

On the second postoperative day, a slight cyanosis was noted. This became very marked on the third day. Nothing was found on physical examination to account for the degree of cyanosis that was present. There was no change in the heart, no mediastinal shift or change in auscultation, with the exception of a few moist râles at the right base. The patient felt fine and certainly did not share the concern of his attending physicians. The abdomen was scaphoid and the temperature was coming down.

The morning of the fourth day the patient was deeply cyanotic, apathetic and disoriented. He was having tetanic seizures with carpopedal spasm. Ankle clonus and extremely active deep reflexes were present. The respirations were decreased to nine shallow excursions a minute. It was at this time that a chloride deficiency and alkalosis was even considered as being responsible for the patient's condition.

Dr. Paul J. Fouts of the medical service was asked to see the patient and ordered immediate determinations of the blood chloride and carbon dioxide combining power. These confirmed the diagnosis of alkalosis, with values for the blood chloride of 306.5 mg. (sodium chloride in plasma) and for the carbon dioxide combining power of 123 volumes per cent.

The urinary output, which had been ample up to this time, diminished to 100 cc. for twenty-four hours.

Following the laboratory examinations, massive amounts of fluid were given intravenously. This totaled 7,600 cc. for the next twenty-four hours and contained approximately 90 Gm. of sodium chloride. Two liters of these fluids was given in the form of Hartman's solution and one contained 5 per cent dextrose. Ammonium chloride, 6 Gm., was given twice by rectum.

The following day (fifth postoperative) the patient seemed generally weaker and still was deeply cyanotic, though respirations were normal in rate and depth. The plasma sodium chloride was 533 mg. and the carbon dioxide combining power was 87 volumes per cent. The patient's temperature rose to 104 and many râles were heard throughout both lung bases. The urinary output for the previous twenty-four hours was 70 cc. The patient was given 100 cc. of 50 per cent dextrose intravenously. This caused no change in condition and resulted in no urinary output. During a second administration of dextrose later in the day the patient died.

Unfortunately a blood urea determination was not done. That it was markedly elevated there can be no doubt, since this is a characteristic feature of alkalosis and since the urinary output was so markedly diminished.

Permission for autopsy was obtained and revealed marked congestion and edema of the lungs with hypostatic bronchopneumonia at the bases. A local fibrinous peritonitis was found about the area of perforation and in the pelvis. A moderate amount of turbid fluid was present in the general peritoneal cavity. The ulcer repair was still tightly sealed. Microscopic changes in the kidneys included interstitial scarring, edema and round cell infiltration. There were a few hyalinized glomeruli and moderate degenerative changes in the convoluted tubules. Cellular débris and many casts were found in these and in the straight tubules.

There was insufficient evidence in the autopsy in case 1 to account for death, with the exception of the terminal hypostatic pneumonia. The alkalosis apparently was not a final deciding factor, as evidenced by the improvement shown by laboratory examination and lack of tetany and apnea during the last day. It is assumed then that, though the patient lived for thirty hours after alkalosis was diagnosed, too much renal damage had taken place in an already inferior renal tissue to allow recovery.

The association of renal insufficiency developing in alkalosis is well known. Also, the frequency with which mild or even severe alkalosis may develop in ulcer patients receiving alkali has been frequently discussed and needs no elaboration here.

Cyanosis as a sign in alkalosis is not well understood or appreciated. This relationship was discussed by Koehler[1] in reporting cases in which alkalosis developed as a result of alkali therapy. Koehler felt that cyanosis resulted from a disturbance in the shift of the chlorine ion between plasma and red

1. Koehler, A. E.: Acid-Base Equilibrium, Arch. Int. Med. **31**: 590 (April) 1923.

blood corpuscle. This was thought to interfere with the formation of oxyhemoglobin. Partial confirmation of this view is found in the work of Morris.[2] Whatever the mechanism, it must have persisted after the alkalosis came under control in the case under discussion. This is evidenced by the fact that the cyanosis continued unchanged even with the elevation of the blood chlorides and the decrease in carbon dioxide combining power.

If the same problem should arise again it is difficult to say how the therapy should be changed. Possibly the sodium chloride was given too rapidly. Cooke[3] is of the opinion that acidotic drugs (ammonium chloride in this instance) do not hasten recovery and in large doses may actually be dangerous. The real therapy consists in anticipation and prevention of alkalosis.

CASE 2.—A youth, aged 18, occupied a bed adjacent to the patient just discussed. He had been operated on for a perforated peptic ulcer just two days before the operation in case 1. There was no previous history of ulcer and perforation occurred while the stomach was empty. Repair was effected in an identical manner as in case 1 four hours after perforation. The boy was making a nice, uneventful recovery. The nasal gastric suction apparatus, which was started immediately after operation, was removed on the fifth day. Water and fruit juices were allowed by mouth.

Because of considerable gastric retention, aspiration of the stomach was done night and morning. This resulted in the removal of amounts of fluid varying between 800 and 1,200 cc.

The patient complained slightly of a light-headed sensation. He was also unduly anxious about his condition for one of his age. This was especially true in view of the fact that his wound was healing nicely, the abdomen was scaphoid and soft, and he had no fever. On the morning following the death of the first patient, the boy was more carefully examined. Nothing was found except a slight but definite cyanosis of the lips. Because of this, blood chloride and carbon dioxide studies were ordered. The blood chloride reported as sodium chloride in the plasma was 348.5 mg., while the carbon dioxide combining power was 84.6 volumes per cent.

The diagnosis of alkalosis was made and the patient was given 2,000 cc. physiologic solution of sodium chloride intravenously. The periodic aspirations of the stomach were stopped. Cyanosis was not noted the following day (eighth postoperative day) and the patient seemed much improved mentally. Laboratory studies gave blood chloride 415 mg. and carbon dioxide combining power 90.5 volumes per cent. The slight rise in the latter figure over that of the previous day remains unexplained.

The patient received more intravenous salt solution and was put on a frequent feeding soft diet. From this time on his convalescence was uneventful.

COMMENT

From these experiences, several precautionary measures are suggested in the use of nasal gastric suction:

1. Ulcer patients receiving alkalis are frequently in mild alkalosis as a result of this therapy. They therefore demand particular care.

2. These patients are poor anesthetic risks.[4] When possible, alkalis should be stopped several days prior to an elective operation. Water and salt should be forced during this period.

3. The association of renal insufficiencies and alkalosis in treatment of peptic ulcer is a frequent occurrence.

4. The routine and indiscriminate use of the nasal gastric suction apparatus is extremely hazardous in the occasional case. This is particularly true when used for peptic ulcer.

5. The amount of drainage by this route should be measured daily and this amount added to the patient's fluid requirement. The quantity of chloride thus removed must be fully covered with intravenous saline solution.

6. There is a real danger in allowing sips of water by mouth to the patient with gastric suction. In excess (case 1) this acts as a constant gastric lavage adding to the chloride loss.

7. Cyanosis is suggestive evidence of alkalosis as well as is tetany, hyperactive reflexes, nervousness, introspective attitude, headache and the like.

8. A case of alkalosis here reported resulted in death following the routine and uncontrolled use of the nasal gastric suction apparatus.

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2. Morris, N.: Anoxemia and the Increased Electrical Excitability of the Neuron, Brit. J. Exper. Path. **3**: 101 (April) 1922.

3. Cooke, A. M.: Alkalosis Occurring in Alkaline Treatment of Peptic Ulcers, Quart. J. Med. **1**: 527 (Oct.) 1932.

4. Gatewood, W. E.; Gaebler, O. H.; Muntwyler, Edward, and Myers, V. C.: Alkalosis in Patients with Peptic Ulcer, Arch. Int. Med. **42**: 79 (July) 1928.

Special Article

THE PHARMACOPEIA AND THE PHYSICIAN

THE USE OF EXPECTORANTS

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This is one of a series of articles written by eminent authorities for the purpose of extending information concerning the official medicines. The twenty-four articles in this series have been planned and developed through the cooperation of the U. S. Pharmacopeial Committee of Revision and THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.—ED.

An expectorant may be defined as a medicine which aids in the removal of mucus or exudate from the lungs, bronchi and trachea. This action may be accomplished by causing a more active secretion, or by making the sputum more liquid or less tenacious. Another means of removal of sputum would be to stimulate the act of coughing, but this is seldom necessary or wise except in unusual states of debility in which large accumulations of sputum may actually imperil the patient. Often such a method would result in an expenditure of precious energy, and if possible aspiration should be employed instead. Coughing is nature's most efficient method of raising and ejecting sputum, and in some instances in which coughing is excessive, therapy must aim at controlling this act to allow the patient physical and mental rest and allow coughing at a time when it can be most efficacious.

To cough is to expel air, mucus or exudate from the lungs or air passages in a noisy, violent manner. When the respiratory mucosa is irritated by congestion, exudate or for some other reason, the nerve fibers transmit the impulse to the respiratory center and the rather complex act of coughing is excited. Deep inspiration occurs, the glottis closes, and forced expiration is made. When the pressure becomes great enough to open the glottis, the sudden change in pressure is attended by the expulsion of a blast of air which characterizes the cough. If mucus or exudate is present in the lower respiratory tract it may be ejected with the air and the cough is "productive." If little or no exudate is present, or no sputum can be raised because of tenaciousness or for other reasons, the cough is said to be "dry" or "unproductive."

In respiratory tract disease in which bronchial obstruction, diffuse or localized, is a part of the picture, there is a derangement of intrapulmonic and intrapleural pressures, the extreme of which is found in

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pulmonary emphysema. Mucus or exudate may cause partial bronchial obstruction to both inspiration and expiration. The forces of expiration are not as great as those of inspiration, and emphysema results from the accumulation of air in the alveoli and overdistention of their walls. Efforts to inspire air past the obstruction may be attended by increased negative intrapleural pressure, but if expiration is impeded greatly, as in obstructive emphysema, intrapleural pressure becomes elevated positively. In coughing, the forced expiration is accompanied by increased intrapulmonary pressure and elevated intrapleural pressure, simulating transiently the pressure changes found in emphysema, and, therefore, frequent prolonged unproductive coughing may be harmful. Since obstruction due to bronchial spasm or accumulation of sputum may respond to medication, these factors should be carefully evaluated in the selection of expectorants.

Indications for expectorants most often arise in inflammatory conditions of the lungs and larger air passages, and since the same expectorant may not be efficient or advisable in the different stages of the disease, the proper selection depends on a thorough understanding of the underlying pathologic condition. In allergic manifestations, as bronchial asthma and asthmatic bronchitis, the degree of bronchial spasm and the character of the accumulated secretion serve as excellent guides in the choice of therapy. The clinical interpretation of the pathologic process is aided greatly by the close observation of the type of cough and expectoration. Furthermore, the art and science of the prescribing of expectorants is dependent on appraisal of the type of cough, the character of the sputum, and the correlation with the stages and clinical features of the causative disease. Four rather distinct types of cough may be recognized: the hacking, irritative unproductive cough, the "tight" cough with scanty or tenacious sputum, the wheezy, squeaking cough, which may be either dry or productive, and the "loose" cough with abundant sputum. In consideration of the subject under discussion, sputum has three main constituents, water, mucus and purulent exudate, and in the individual case it is necessary to evaluate the relative proportions of these components. In the early congestive stage of acute tracheitis, and bronchitis, the cough is of the hacking, irritative, unproductive type. After a few hours or even as much as from one to three days later it may become a "tight" cough with scanty or tenacious mucoid sputum. In some cases of acute bronchitis, the squeaking, wheezing cough develops. Later in the disease the sputum becomes more abundant and mucopurulent and the cough loose. Bronchopneumonia may provide a similar change in the cough and sputum. Lobar pneumonia often has a type of cough and sputum characteristic of the disease, but generally the early stage has a tight grunting cough with a scanty, more tenacious mucopurulent and rusty sputum, while in the later stages the cough is loose and there is abundant, more purulent, sputum. Chronic bronchitis produces a thicker mucopurulent sputum, which at times is tight, at other times loose, depending on the abundance of the sputum, on the relative amounts of pus and mucus, and on associated bronchial spasm, and at times the cough may have a wheezy character. The cough of congestive heart failure is often rather unproductive until secondary infection in the bronchi or lungs appears; then it simulates that of chronic bronchitis. If pulmonary edema occurs, the sputum is abundant, watery and frothy, and may be blood tinged. The wheezing, squeaking cough is characteristic of bronchial obstruction and is the type found in asthma and asthmatic bronchitis, and here the sputum is scant at first, later more abundant, and is tenacious and contains varying amounts of mucus and pus, depending on an associated bronchitis. In chronic pulmonary disease a loose cough with abundant purulent sputum usually means pulmonary suppuration with cavity, such as lung abscess, suppurative pneumonitis or bronchiectasis. In the latter conditions, coughing occurs when the exudate reaches the irritable level in the air passages, since the deeper portions of the lungs are rather insensitive to stimulation; thus the reason for postural drainage in such cases. The odor of the sputum may be a very good index as to the prolonged retention in the suppurating area. Although older writings have described a characteristic cough and sputum of tuberculosis, it is now recognized that almost any of the types mentioned may be found in pulmonary tuberculosis, depending on the type of pathologic process present. As a general rule the appearance of gross blood in the sputum of chronic pulmonary disease calls for pulmonary rest.

Since the beginning of medicine the patient with a cough has expected and often demanded a "cough medicine" as part of the treatment. A review of old authoritative works on therapeutics reveals numerous drugs of one kind and another used for this purpose, a great many of them now obsolete, and provides an interesting historical background in therapy. Indeed, it would seem that the use of expectorants has been more of an art than a science.

Usually an expectorant is classified as "stimulant" or "sedative," and Sollmann [1] has included a third group, the "anodyne expectorants." Perhaps such a classification serves some useful purpose, although it is difficult to list accurately the expectorant drugs under these three headings. There is some confusion in the definition of these terms; for example, one medical dictionary [2] defines a stimulant expectorant as one "used to expel secretions already formed"; one textbook on therapeutics [3] refers to stimulant expectorants as those "which are largely excreted in the bronchial mucus and which check the secretion or modify its character in some obscure way"; Fantus [4] defines this class of expectorants as "aromatic bodies that owe their virtue to elimination from the bronchial mucous membrane. Given in sufficient dosage, they possibly tend to favor healing by producing a curative hyperemia." Bethea,[5] referring to Sollmann's classification, gives a practical correlation and clinical guidance as follows:

> Sedative Expectorants: They are intended to soothe the acute inflammation mainly by stimulating the secretion of protective mucus. They may be nauseants, as ipecac; demulcents, as acacia or glycyrrhiza; salines, as ammonium chloride; alkalis, as ammonium carbonate. Irritant (stimulant) Expectorants: These are intended to irritate the mucous membranes in such a way as to stimulate repair. They also tend to diminish excessive secretion. Some of these are also called aromatic expectorants. Typical of this group are terpin hydrate and creosote.

1. Sollmann, Torald: A Manual of Pharmacology, ed. 4, Philadelphia, W. B. Saunders Company, 1932.
2. American Illustrated Medical Dictionary, ed. 16, 1932.
3. Solis-Cohen, Solomon, and Githens, T. S.: Pharmacotherapeutics, New York, D. Appleton & Co., 1928.
4. Fantus, Bernard: The Therapy of the Cook County Hospital: Coughs, J. A. M. A. **106**: 375 (Feb. 1) 1936.
5. Bethea, O. W.: Cough—Some Problems in Therapy, Internat. M. Digest **25**: 178 (Sept.) 1934.

Anodyne Expectorants: These are intended to depress the excessive cough reflex. These tend usually to diminish secretion. Codeine is typical.

Accordingly, the expectorant drugs official in the U. S. Pharmacopeia XI may be listed as in the accompanying table.

Expectorant Drugs

Sedative Expectorants	Calcii Creosotas
Ammonii Chloridum	Guaicol
Ammonii Carbonas	Eucalyptol
Liquor Ammonii Acetatis	Oleum Eucalypti
Potassii Acetas	Oleum Picis Rectificatum (Oil of Tar)
Potassii Citras	Syrupus Picis Pini
Sodii Citras	Oleum Terebinthinae
Syrupus Acidi Hydriodici	Terebenum
Potassii Iodidum	Terpini Hydras
Calcii Iodobehenas	Oleum Pini Pumilionis
Antimonii et Potassii Tartras	Syrupus Scillae
Apomorphinae Hydrochloridum	
Syrupus Ipecacuanhae	
Mistura Opii et Glycyrrhizae Composita (Brown Mixture)	*Anodynes*
	Morphinae Sulfas
Stimulant Expectorants	Codeinae Sulfas
	Codeinae Phosphas
Creosotum	Aethylmorphinae Hydrochloridum
Creosoti Carbonas	

Ammonium Chloride.—Ammonium chloride causes the sputum to be more fluid and less tenacious and may increase the quantity. Therefore, it is useful in the "tight" cough accompanied by scanty or tenacious sputum, and this is most often seen in the acute and subacute inflammatory conditions (bronchitis and pneumonia) and asthma. Ammonium chloride is not indicated in the chronic stages when the sputum has become more abundant and easy to raise. Its effect does not last long and it should therefore be given at frequent intervals, perhaps as often as every two hours, and usually the dose of 5 grains (0.3 Gm.) is satisfactory. It should not be prescribed with alkali hydroxides or carbonates. The following vehicles are especially suitable for ammonium chloride: syrup of citric acid, syrup of cherry, syrup of wild cherry, syrup of acacia, syrup of tolu balsam and elixir of glycyrrhiza.

Ammonium Carbonate.—This drug has much the same indications as does ammonium chloride, although it is more irritating to the throat and stomach and in large doses may act as a nauseant. With regard to dosage and frequency of administration, it should be used in much the same way as ammonium chloride. It is incompatible with acids and should not be prescribed with the syrups of acid reaction, such as those of citric acid, squill and ipecac. Although carbonates precipitate free alkaloids from aqueous solutions of most alkaloidal salts, codeine and atropine are not precipitated by ammonium carbonate.

Suitable vehicles for ammonium carbonate are syrup of acacia, elixir of glycyrrhiza and syrup of tolu balsam. Additional flavoring may be helpful in disguising the unpleasant taste, and for this purpose anise water, peppermint water and compound tincture of cardamom may be used.

Citrates and Acetates.—Although some of the citrates and acetates have been used in the acute respiratory infections for their diuretic and indirect alkalinizing effect, they have been listed also among the expectorants, especially in larger doses, by many physicians. Representative of this group of drugs are sodium and potassium citrates and solution of ammonium acetate and potassium acetate. When the citrates are to be used, the sodium citrate is commonly chosen and should be given in doses of 15 grains (1 Gm.) every two hours, taken with at least 3 ounces (90 cc.) of water. Either the sodium or the potassium citrate may be nicely prescribed in the syrup of citric acid or the syrup of orange. The acetates are somewhat less palatable and two common representatives of this group are solution of ammonium acetate and potassium acetate. The solution of ammonium acetate (liquor ammonii acetatis) is made from ammonium carbonate and acetic acid and should be used only when freshly prepared. The average dose is one-half ounce (15 cc.) and is best given in one of the aromatic waters and flavored syrups. Peppermint is especially recommended as a flavor. If acetates are to be prescribed, potassium acetate in 15 to 30 grain (1 to 2 Gm.) doses in one of the aromatic waters and flavoring syrups is recommended.

Iodides.—Fantus[4] states that "iodide is the most powerful agent available for producing hyperemia and exciting secretion of the respiratory mucous membrane," and "therefore it is contraindicated in acute bronchitis." By the same reasoning it is contraindicated in other acute forms of respiratory infection, such as the early stages of pneumonia. When the pathologic process is older and the sputum more tenacious, or in asthma or asthmatic bronchitis, the iodides may be very helpful. They are used against a thick sputum. Three official forms may be mentioned: potassium iodide, syrup of hydriodic acid, and calcium iodobehenate. The average doses given for these drugs are potassium iodide 5 grains (0.3 Gm.), syrup of hydriodic acid, 4 cc., calcium iodobehenate 8 grains (0.5 Gm.). If one considers only the iodine content in these drugs in the doses given, the amount of iodine is not comparable, the potassium iodide containing the most, the calcium iodobehenate being next, and the syrup of hydriodic acid containing the least. Potassium iodide is the simplest and most efficient form to prescribe if the iodide effect is desired. As saturated solution it may be given in five drop doses in milk after meals, or it may be prescribed in syrup of tolu balsam, syrup of orange, syrup of cherry or syrup of wild cherry, and syrup of pine tar. Syrup of hydriodic acid, in drachm (4 cc.) doses every three or four hours, is prescribed ordinarily as such. The calcium iodobehenate is especially useful in cases in which potassium iodide causes gastric irritation and may be prescribed in its pure form without any vehicle.

Iodide should not be used in any case suspected of tuberculosis because of the danger of its increasing the activity of the disease.

Among the expectorants which are effective because of their nauseant action are ipecac, antimony and apomorphine. This group is indicated in acute respiratory infection in the early congestive stage when there is a "dry" cough. The official preparations have been listed. Of these ipecac probably is the most used now and is especially employed in the acute laryngeal, tracheal and bronchial inflammations in children. The syrup of ipecac may be prescribed as such, the dose being from 5 to 12 minims (0.3 to 0.7 cc.), or it may be combined with some other expectorant indicated in the early inflammatory stage. Syrup of orange and syrup of tolu balsam are suitable vehicles for ipecac. Antimony in some form was formerly used widely as an expectorant but has become less popular. Antimony and potassium tartrate is commonly employed, the dose ranging from $\frac{1}{60}$ to $\frac{1}{20}$ grain (1 to 3 mg.), and syrup of glycyrrhiza, of orange or of tolu balsam makes a satisfactory vehicle. A large part of the expectorant action of the compound mixture of glycyrrhiza (brown

mixture) may be attributed to its antimony content. Apomorphine hydrochloride is most often given subcutaneously, the average dose being 1/60 grain (1 mg.), although a satisfactory effect may be obtained by mouth.

The stimulant sedatives are most useful in the chronic inflammatory conditions. They tend to lessen the mucus and exudate and the hyperemia caused by them may aid the healing process. They should not be used in the acute stage because of the tendency to produce hyperemia. Creosote compounds and terpin hydrate, both aromatic, are the representatives of this group which will be discussed here. Both calcium creosotate and creosote carbonate are satisfactory preparations and are used much the same. The average dose of calcium creosotate is 8 grains (0.5 Gm.) and of creosote carbonate 15 grains (1 Gm.). Doses should be smaller at first. Usually an interval of four hours between doses is satisfactory. These drugs are especially useful when the sputum is abundant, as in lung abscess, bronchiectasis and suppurative pneumonitis. Many patients indicate that the sputum becomes less objectionable in taste and odor after taking these. Calcium creosotate is best given in tablets. Creosote carbonate, in ascending (drop) doses, should be shaken up with milk.

Terpin hydrate is indicated in the chronic cough with abundant sputum and is said to be helpful especially against an excessive liquid sputum. It is commonly used in the form of elixir of terpin hydrate, which contains an insufficient quantity of terpin hydrate to give the best effect. For the full effect it is better to give terpin hydrate in capsules containing from 2 to 5 grains (0.13 to 0.3 Gm.) three or four times a day. Elixir of terpin hydrate serves as a suitable vehicle for codeine.

Squill, not an aromatic but classified as a stimulant expectorant, has been used considerably in acute bronchial inflammation of children and in "spasmodic croup," as the syrup of squill, usually in doses of from 15 to 30 minims (1 to 2 cc.). At one time it was also said to be helpful in the "winter bronchitis" of the aged. In the latter instance its good effect no doubt was related to the cardiac element in the so-called bronchitis. The syrup contains sufficient squill, if given in frequent doses, to produce some "digitalis-like" effect and this should be kept in mind in its usage. The syrups mentioned are suitable vehicles, and other expectorants are sometimes added. Ammonium carbonate should not be put in syrup of squill.

The anodyne expectorants, so called, hardly need any comment, except to caution against their use in cases in which there is abundant purulent sputum. The purpose of the cough is to get rid of this exudate, and suppression of the cough reflex may be hazardous. Nevertheless, they are useful in giving the patient rest if coughing in such cases has tended to cause exhaustion. These drugs act by allaying the cough reflex, and the dose and frequency of administration are an individual problem. Codeine sulfate or phosphate are ones of choice; morphine should be avoided in treatment of the chronic cough because of the danger of addiction. However, there are occasions when good clinical judgment may dictate its use for temporary relief.

Diffuse partial bronchial obstruction as exemplified in bronchial asthma and asthmatic bronchitis presents a special problem in the use of expectorants. Both bronchial constriction and plugging by tenacious mucus enter into this mechanism. Solution of epinephrine 1:1,000, in doses of from 3 to 12 minims (0.2 to 0.7 cc.) given intramuscularly, is the most effective remedy for the bronchial spasm. Ephedrine hydrochloride and sulfate have a more prolonged effect and have the advantage of oral administration but are less certain to give relief. The ephedrine compounds in capsules are satisfactory, although they may be put in liquid preparations. Stramonium and belladonna, usually given as the tincture in a vehicle and often combined with some other expectorant, tend to diminish the quantity of the bronchial secretions. Potassium iodide is helpful in combating tenaciousness of sputum.

The availability of so many expectorants may cause difficulty in choice for a particular case. Most of the therapeutic demands can be satisfied by skilful employment of a few representative drugs such as ammonium chloride, potassium iodide, syrup of ipecac, calcium creosotate, terpin hydrate, codeine phosphate, epinephrine, ephedrine sulfate and tincture of belladonna. The selection of a suitable vehicle may be of no little importance in commanding the respect and cooperation of the patient. Syrups of acacia, tolu balsam, cherry, wild cherry and citric acid and elixir of glycyrrhiza furnish a fairly adequate choice.

PRESCRIPTION 1.—*For Acute Bronchitis or Pneumonia*

℞ Ammonium chloride ..... 10 Gm.
Elixir of glycyrrhiza..... 60 cc.
Syrup of acacia.....to make 120 cc.
M. S.: One teaspoonful in half a glass of water every two hours.

PRESCRIPTION 2.—*For Acute Bronchitis or Pneumonia*

℞ Ammonium chloride ..... 10 Gm.
Syrup of citric acid.....to make 120 cc.
M. S.: One teaspoonful in half a glass of water every two hours.

PRESCRIPTION 3.—*For Acute Bronchitis or Pneumonia*

℞ Ammonium carbonate ..... 10 Gm.
Compound tincture of cardamom..... 30 cc.
Syrup of tolu balsam.....to make 120 cc.
M. S.: One teaspoonful in half a glass of water every two hours.

PRESCRIPTION 4.—*For Subacute or Chronic Conditions*

℞ Potassium iodide ..... 10 Gm.
Syrup of tolu balsam.....to make 120 cc.
M. S.: One teaspoonful three times a day, after meals.

PRESCRIPTION 5.—*For Asthma or Asthmatic Bronchitis*

℞ Potassium iodide ..... 15 Gm.
Tincture of stramonium..... 20 cc.
Syrup of tolu balsam.....to make 120 cc.
M. S.: One teaspoonful three times a day, after meals.

PRESCRIPTION 6.—*For Children*

℞ Syrup of ipecac..... 5 cc.
Syrup of orange.....to make 60 cc.
M. S.: One teaspoonful every three hours as necessary for cough.

PRESCRIPTION 7.—*For Acute Conditions*

℞ Compound mixture of opium and glycyrrhiza..... 120 cc.
S.: One teaspoonful every three hours as necessary for cough.

Of the accompanying typical prescriptions, 1, 2 and 3 are to be used in acute or subacute inflammatory conditions (acute bronchitis, pneumonia) at a time when the cough is "tight" and the sputum is scanty.

Prescriptions 4 and 5 are to be used in subacute or chronic inflammatory conditions when the sputum is thick, tenacious and more abundant. (Caution: Not to be used in tuberculosis.)

Prescriptions 6 and 7 are to be used in acute inflammatory conditions when the cough is dry or the sputum scanty.

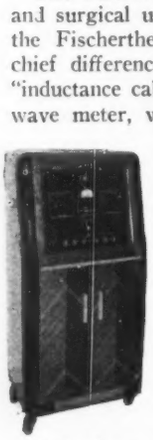
Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT. HOWARD A. CARTER, Secretary.

FISCHERTHERM SHORT WAVE DIATHERMY UNIT MODEL 104-B ACCEPTABLE

Manufacturer: The Fischer Corporation, Glendale, Calif.

The Fischertherm Model 104-B is recommended for medical and surgical use. In construction it is essentially the same as the Fischertherm previously accepted by the Council.[1] The chief difference is that the new machine is arranged for an "inductance cable." The wavelength, checked by an absorption wave meter, was found to remain within 0.5 meter of rated value of 15 meters when working varying loads. The maximum input is said to be 900 watts. Since there is no acceptable method for measuring the output power of short wave machines, this value is not given.

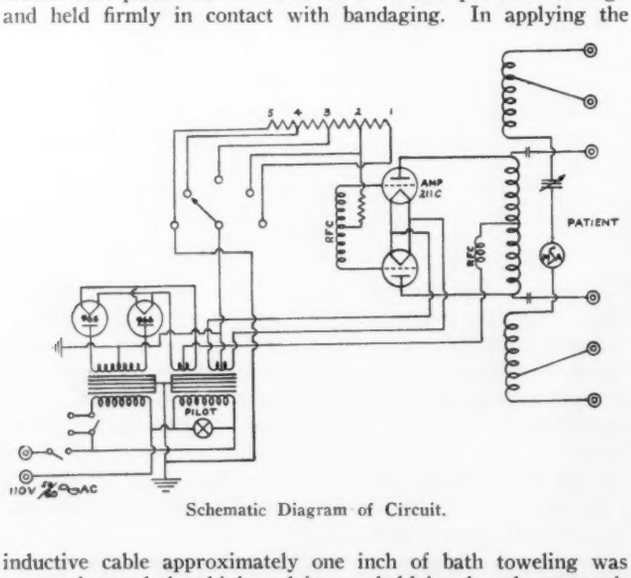


Fischertherm Short Wave Diathermy Unit, Model 104-B.

The firm was asked to furnish evidence to substantiate the efficacy of the "inductance cable" method of application. A reliable investigator compared heating efficiency of this technic with conventional diathermy. The temperature observations were made on reliable and carefully calibrated equipment, which had been accurately checked by a competent physicist.

Twelve observations were made on each machine. Six healthy male medical students were used for subjects. Experiments were conducted on the left and right thigh alternately. Temperature measurements were observed with the thermocouple in the anterior portion of the thigh at depths of one-eighth inch, three-fourths inch, 2 inches or against the bone. These depths were measured from the skin straight in—that is, normal to the surface of the skin.

For the conventional diathermy treatments, block tin electrodes were placed on the medial and lateral aspects of the thigh and held firmly in contact with bandaging. In applying the inductive cable approximately one inch of bath toweling was wrapped round the thigh and it was held in place by approximately four wraps of the inductive cable. Room temperature throughout the day remained between 74 and 78 F. and the wet bulb temperature varied from 60 to 66 F.



Schematic Diagram of Circuit.

Each item given in the accompanying tables is an average of twelve observations, application by the inductance cable in the first table and by block tin electrodes in the second.

The temperature rise of the transformer, after the machine was operated at full load for two hours, came within the limits of safety prescribed by the Council. The total shipping weight is about 85 pounds. Burns may be produced but can be avoided by taking proper precautions when applying the applicators.

The Fischertherm was referred to a clinic acceptable to the Council for investigation and found to give satisfaction in actual practice.

In view of the foregoing favorable report, based on the performance of the unit with the inductance cable, and the evidence previously submitted on cuff electrodes and surgical electrodes, the Council on Physical Therapy voted to include the Fischertherm, Model 104-B, Short Wave Unit, in its list of accepted devices.

TABLE 1.—*Average Temperatures of Twelve Observations, Coil Technic*

Deep Muscle		Subcutaneous		Oral (6 Observations)	
Initial	Final	Initial	Final	Initial	Final
100.1	104.2	98.0	105.1	98.3	99.0

TABLE 2.—*Average Temperatures of Twelve Observations, Block Tin Electrodes*

Deep Muscle		Subcutaneous		Oral (6 Observations)	
Initial	Final	Initial	Final	Initial	Final
99.6	102.5	97.5	101.5	98.0	98.6

1. Fischertherm Acceptable, J. A. M. A. **106**: 1563 (May 2) 1936.

Council on Pharmacy and Chemistry

REPORT OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT. PAUL NICHOLAS LEECH, Secretary.

EDWENIL NOT ACCEPTABLE FOR N. N. R. (II)

In 1933 the Council declared Edwenil unacceptable for inclusion in New and Nonofficial Remedies because it was apparently an unscientific preparation of semisecret composition, marketed under an uninformative name with unwarranted and possibly dangerous therapeutic claims (THE JOURNAL, Oct. 7, 1933, p. 1154). As brought out at that time, Edwenil is a product proposed for nonspecific immune therapy, marketed in the United States by Spicer and Company of Glendale, Calif. It has been variously designated "antibacterin," "a polyvalent antibacterial agent," "the biochemical successor to vaccines," "natural antibody," "a therapeutic active immunizing agent." According to the Council's report of 1933 the complexity of the composition of Edwenil was indicated by the following excerpts from the advertising:

"Edwenil is the result of fifteen years work, representing an effort to produce 'natural immunity' or a 'polyvalent natural antibody.' It is a calcic protein compound, consisting of three elements as follows:

"CALCIUM in the form of the bicarbonate, which is apparently the form in which calcium is required for utilization by the immune body precursors.

"A CALCIUM VEHICLE in the form of a nucleo protein.

"AN UNATTACHED GLOBULIN ELEMENT obtained from serum."

"EDWENIL is a complex organic colloid, formed by a linkage of some of the alkali-denatured protein derivatives of normal serum and muscle, in the presence of a normal saline, containing calcium and magnesium salts."

More recent advertising contains the following statement concerning the composition of the preparation:

"Edwenil is a deproteinized flocculus (protein 0.02 per cent) obtained by fractionation from an extract of beef muscle and normal horse serum. It is a potent, polyvalent, nontoxic lysinogen, or antibody-stimulating agent, which accelerates the mobilization of the potential defenses of the body against endotoxic bacteria."

The number of conditions for which it is recommended are legion and the claims made in the firm's advertising are most extravagant.

In 1935 two very instructive articles on nonspecific protein therapy were published, prepared for the Council by Drs.

Cecil and Hektoen. Following publication of these articles the Council inquired of Dr. Cecil if he would have an investigation made to check some of the claims advanced by Spicer and Company for Edwenil. Dr. Cecil obtained the cooperation of Dr. Stainsby and Miss Shultz. The report of their work is reproduced herewith. No beneficial effects were observed from the use of Edwenil [1] in animals infected with pneumococci or staphylococci. The results of this study fail to confirm in any particular claims advanced by Spicer and Company for Edwenil.

The Council reaffirmed its previous decision that Edwenil be declared unacceptable for inclusion in New and Nonofficial Remedies because it is an unscientific preparation of semisecret composition, marketed under a noninformative name with unwarranted therapeutic claims.

In authorizing publication of the appended report, the Council expresses its appreciation to Drs. Cecil and Stainsby and Miss Shultz for their cooperation.

ANIMAL EXPERIMENTS WITH EDWENIL [2]

By Wendell J. Stainsby, M.D., and Selma M. Shultz, M.A.

Edwenil has been widely advertised as an effective therapeutic agent for controlling endotoxic infections in general and has been specifically recommended for a large number of diseases [3] including furunculosis, acne tonsillitis and quinsy, leukorrhea, drainage after operation, puerperal sepsis, bronchitis, bronchiectasis, bronchial asthma, lobar pneumonia, influenza, the common cold, rheumatoid arthritis, early osteo-arthritis, sciatica, tuberculosis, rheumatic fever, measles, mumps, whooping cough, scarlet fever, chronic pyelitis and cystitis and other febrile conditions. These wide claims for Edwenil as a therapeutic agent are based on clinical observations and animal experimentation. The clinical studies are totally unconvincing. The animal studies, however, as reported in pamphlets [4] circulated by the marketers, or in small almost inaccessible publications,[5] indicate that Edwenil protects laboratory animals against lethal doses of certain pathogenic micro-organisms and increases the immunity of these animals to such an extent that it can be readily demonstrated by the usual laboratory procedures.

The exact composition of Edwenil, as far as we have been able to determine, has not been made public. The marketers, Spicer and Company, however, state in recent advertising [6] that "Edwenil is a deproteinized flocculus (protein 0.02 per cent) obtained by fractionation from an extract of beef muscle and normal horse serum."

In the present study we have attempted to repeat the most promising animal experiments on which the wide claims for Edwenil have been based. In doing this, careful attention has been paid to small details, such as the breed of animals, the amount and virulence of infecting organisms, and the size and number of the injections of Edwenil. As a result of this, large doses of Edwenil, similar to those recommended for human beings, have been used in treating our animals.

The strain of Staphylococcus aureus used in the study produced hemolysis on blood agar plates and was originally obtained from a patient infected with it. The strain of pneumococcus type I used was a laboratory strain originally obtained from a patient suffering from lobar pneumonia.

EFFECT OF EDWENIL IN PROTECTING INFECTED LABORATORY ANIMALS FROM DEATH

The first experiments were designed to determine whether Edwenil would protect albino mice infected with type I pneumococci. As a preliminary test, it was desirable to know whether the drug itself is poisonous to these animals if injected either intraperitoneally or subcutaneously in large doses. Five mice were injected intraperitoneally with 1 cc. of Edwenil. All of them developed a chill immediately after the injection and appeared ill. After approximately two hours' time, four of the five animals recovered and remained well. The remaining animal died two hours after the injection. Five other mice were injected with 0.5 cc. of Edwenil subcutaneously. These animals did not develop any symptoms and remained well. From these experiments it is apparent that Edwenil is toxic to mice when injected intraperitoneally in the doses mentioned, but not when injected with a smaller dose subcutaneously. It seems quite probable that these toxic effects were due to the preservative in the preparation.

With the foregoing experiment as a basis, the work outlined in table 1 was carried out. Attention is called to the fact that in some of the experiments Edwenil was injected prior to infection as well as during infection in order that no question could arise as to whether the drug was administered early enough. The minimal lethal dose of the strain of pneumococcus was determined and found to be from one to ten pairs of pneumococci. The number of organisms injected varied from a dosage comparable to the one implied by the published experimental work down to the minimal lethal dose of our organisms. No difference whatever could be observed between the treated and the control animals. The mice injected with pneumococci whether treated with Edwenil or not died within forty-eight hours.

TABLE 1.—*Effect of Edwenil on Mice Infected with Pneumococcus Type I*

Control Animals			Treated Animals		
No. of Organisms Injected	No. of Animals	Result	No. of Animals	Treatment with Edwenil	Result
50,000	5	Died in 48 hrs.	1	Two 1 cc. doses intraperitoneally during infection	Died in 30 hrs.
			1	Two 1 cc. doses intraperitoneally during infection	Died in 48 hrs.
			3	Three 1 cc. doses subcutaneously during infection	Died in 48 hrs.
23,000	5	Died in 48 hrs.	2	One 0.25 cc. dose subcutaneously before infection One 0.25 cc. dose subcutaneously during infection	Died in 24 hrs.
			3	One 0.25 cc. dose subcutaneously before infection Two 0.25 cc. doses subcutaneously during infection	Died in 48 hrs.
350	5	Died in 48 hrs.	5	Three 0.25 cc. doses subcutaneously during infection	Died in 48 hrs.
100	5	Died in 48 hrs.	3	Two 0.5 cc. doses subcutaneously during infection	Died in 30 hrs.
			2	Two 0.5 cc. doses subcutaneously during infection	Died in 48 hrs.
			2	One 0.5 cc. dose subcutaneously before infection One 0.5 cc. dose subcutaneously during infection	Died in 30 hrs.
			3	One 0.5 cc. dose subcutaneously before infection One 0.5 cc. dose subcutaneously during infection	Died in 48 hrs.
10	2	Died in 24 hrs.	3	Two 0.5 cc. doses subcutaneously during infection	Died in 30 hrs.
	3	Died in 48 hrs.	2	Two 0.5 cc. doses subcutaneously during infection	Died in 48 hrs.
			5	One 0.5 cc. dose subcutaneously before infection One 0.5 cc. dose subcutaneously during infection	Died in 48 hrs.

1. The Edwenil used in this investigation was purchased on the open market.

2. From the New York Hospital and the Department of Medicine, Cornell University Medical College.

3. Edwenil (A Polyvalent Antibacterial Agent) in Endotoxic Infections, an undated pamphlet issued by Spicer and Company.

4. The Edwenil Contact, a pamphlet published bimonthly by Spicer and Company, 5: 48-50 (March) 1937. The Edwenil Contact (supplement), No. 38, February 1936, p. 8.

5. Kimball, T. S.: Changes in the Blood Picture Following Edwenil Therapy, Oakmont Papers on Immunology, 1935, pp. 25-28. Coddington, H. W.: Observations on the White Blood Count, Phagocytosis and Other Bacteriocidal Powers of Whole Blood, ibid., pp. 29-45. Animal Experiments with Edwenil: The Endotoxic Infections and Their Control with Edwenil, Spicer and Company, 1936, pp. 33-53.

6. Undated pamphlet on Edwenil issued by Spicer and Company.

In table 2 is presented an outline of experiments carried out on rabbits infected with either the strain of Staphylococcus aureus or the strain of pneumococcus. Care was taken to select rabbits of similar weights and ages for the treated and control groups. The organisms were injected intravenously in the amounts indicated after preliminary experiments had been completed to determine the lethal doses of the organisms. It should be noted that, with one group of animals, two separate injections of the pneumococcus were given. Edwenil was given in each case at daily intervals.

Altogether eighteen rabbits, nine of which were kept as controls, were infected with the pneumococcus. Two of the treated animals recovered, while three of the controls recovered. Of the animals that died, the average duration of life for the controls was four days, while for the treated animals it was eleven and a half days.

Twelve rabbits, six of which were kept as controls, were infected with Staphylococcus aureus. One of the controls and two of the treated animals recovered. Of those that died the average length of life for the controls was seventeen days and for the treated fifteen days.

Table 2.—*Effect of Edwenil on Infected Rabbits*

Control Animals			Treated Animals		
No. of Organisms Injected	No. of Animals	Result	No. of Animals	Treatment with Edwenil	Result
Rabbits—Pneumococcus Type I Injected Intravenously					
46,000 (in saline solution)	2	Recovered	1	Five 1 cc. doses subcutaneously during infection	Recovered
			1	Four 1 cc. doses subcutaneously during infection	Died in 3 days
120,000 (in saline solution)	1	Died in 48 hrs.	1	Four 1 cc. doses subcutaneously before infection Four 1 cc. doses subcutaneously during infection	Died in 3 days
	1	Died in 4 days	1	Four 1 cc. doses subcutaneously before infection Three 1 cc. doses subcutaneously during infection	Died in 48 hrs.
	1	Recovered	1	Four 1 cc. doses subcutaneously before infection Five 1 cc. doses subcutaneously during infection	Recovered
300,000 (in saline solution) 180,000 (in broth)	1	Died in 6 days	1	Four 1 cc. doses subcutaneously before infection Six 1 cc. doses subcutaneously during infection	Died in 16 days
		Died in 5 days	1	Four 1 cc. doses subcutaneously before infection Eight 1 cc. doses subcutaneously during infection	Died in 18 days
80,000 (in broth)	1	Died in 4 days	1	Three 1 cc. doses subcutaneously before infection Three 1 cc. doses subcutaneously during infection	Died in 16 days
	1	Died in 3 days	1	Three 1 cc. doses subcutaneously before infection Three 1 cc. doses subcutaneously during infection	Died in 12 days
Rabbits—Staphylococcus Aureus Injected Intravenously					
160,000,000 (in broth)	1	Died in 19 days	1	Five 1 cc. doses subcutaneously before infection Five 1 cc. doses subcutaneously during infection	Recovered
	1	Died in 9 days	1	Five 1 cc. doses subcutaneously before infection Five 1 cc. doses subcutaneously during infection	Died in 11 days
270,000,000 (in broth)	1	Recovered	1	Six 1 cc. doses subcutaneously during infection	Died in 36 days
	1	Died in 25 days	1	Seven 1 cc. doses subcutaneously during infection	Recovered
800,000,000 (in broth)	1	Died in 20 days	1	Six 1 cc. doses subcutaneously during infection	Died in 11 days
	1	Died in 13 days	1	Three 1 cc. doses subcutaneously during infection	Died in 3 days

Considerable experimental work in infecting guinea-pigs with strains of pneumococci was carried out. As is well known, the guinea-pig is particularly resistant to infection with pneumococci. Although several stock and freshly isolated strains were used, we were unable to obtain an organism of sufficient virulence for guinea-pigs to carry out experiments with this animal.

However, the experimental work with mice and rabbits, as reported by us, fails to provide any evidence that Edwenil protects these animals against death by infection with either pneumococci or staphylococci regardless of whether Edwenil was administered during infection or before infection as well.

EFFECT OF EDWENIL ON THE TOTAL WHITE CELL COUNT OF HEALTHY RABBITS

The normal white cell count was determined on nine healthy white rabbits and was found to average 8,156 cells. Each of these animals was injected with 1 cc. of Edwenil subcutaneously for three, four or five successive days. During the period of the injection, venipunctures were made from the ear on several occasions for various other studies. On the day after the last injection of Edwenil, the total white cell count on these rabbits was found to average 15,233, a distinct increase. The question then arose as to whether the increased cell count was due to Edwenil or to the trauma occasioned by the injections and the venipunctures. To determine this point, six similar rabbits were employed and the normal total white cell count was taken on three successive days. After the normal cell count was thus carefully determined, three of the rabbits were injected with 1 cc. of Edwenil subcutaneously for three successive days while the other three were injected in a similar manner with physiologic solution of sodium chloride. Unnecessary trauma was eliminated. Total white cell counts were made each day on these animals while they were injected and on the day after the last injection. The results of this experiment appear in table 3, and it can be readily seen that leukocytosis did not occur in either the Edwenil treated group of animals or in the controls, which indicates that the leukocytosis occurring in the first experiments on healthy animals was due to some factor other than the Edwenil, probably the trauma. From these studies we conclude that Edwenil injected subcutaneously in healthy rabbits does not produce a leukocytosis.

EFFECTS OF EDWENIL ON THE TOTAL WHITE CELL COUNT OF INFECTED RABBITS

All the rabbits listed in table 2 were followed with total white cell counts until they died from infection or recovered from it. Altogether there were fifteen animals treated with Edwenil and fifteen controls, of which four recovered in the treated group and four in the controls. Counts were made daily for the first three or four days and thereafter at less frequent intervals. The intervals between counts on the control animals were similar to those on the treated animals. Altogether 183 total white cell determinations were made, and for brevity only the average counts are listed in table 4. From the table it is readily seen that a mild leukocytosis was present in the animals from the first day following infection, and that this became more marked after the eighth day. The white cell count on the animals infected with the staphylococcus was generally higher than that obtained on animals infected with the pneumococcus, but no differences were noted as between the Edwenil treated group and the controls. In addition, careful studies of the figures were made as regards the animals that recovered, as distinct from those that died, and regardless of how the figures were studied, no evidence was found that Edwenil increased the leukocytosis in rabbits infected with either the pneumococcus or the staphylococcus.

EFFECT OF EDWENIL ON THE DIFFERENTIAL WHITE CELL COUNT OF INFECTED RABBITS

The thirty rabbits listed in table 2 were also followed throughout the course of their infection with differential white cell counts. For the first few days these counts were made daily,

and thereafter at somewhat longer intervals. All the smears for study were stained by Wright's technic and 100 cells were counted.

Although the rabbits infected with the staphylococcus developed a greater leukocytosis than those infected with the pneumococcus, the results of the differential counts were grouped together, as no appreciable relative increase of any type

TABLE 3.—*Effect of Edwenil on Total White Blood Count of Healthy Rabbits*

Rabbits	Normal Counts	Time of White Cell Count After First Injection: 24 Hrs.	48 Hrs.	3d Day	4th Day
102	10,200 13,300 13,800	12,700	10,800	12,100	10,700
109	12,100 11,400 10,500	9,600	10,200	10,500	9,300
111	7,500 9,200 9,300	8,100	9,000	7,300	10,900
		Controls			
104	16,600 14,600 14,500	9,200	11,700	16,000	10,800
110	12,300 11,900 9,000	10,850	7,500	8,200	7,400
112	7,000 10,000 8,400	13,000	10,300	8,400	7,600

TABLE 4.—*Average Total White Blood Cell Counts of Infected Rabbits Treated with Edwenil and Controls*

	Treated (15 Rabbits)	Controls (15 Rabbits)
Average normal count	9,143	7,477
24 hours after infection	11,463	9,096
48 hours after infection	11,669	12,141
3d day after infection	11,058	10,270
4th day after infection	9,966	11,728
5th to 8th day after infection	12,216	18,563
9th day or later	23,147	23,631

of cell was found in either group of animals. A summary is presented in table 5. As will be seen from this table, there was a marked increase in the immature polymorphonuclear neutrophils and in general a decrease in the mature neutrophils and lymphocytes throughout the course of disease in these animals. The results of the differential white cell counts are slightly different in the treated group than in the controls, but the differences are too small to be of any importance.

It is generally recognized that the subsidence of an acute infection manifests itself in the differential white cell count by a decrease in the immature polymorphonuclear cells and a marked, even if transitory, rise in the monocytes while convalescence is characterized by a normal immature polymorphonuclear count and a marked rise in lymphocytes. It would be expected, therefore, that if Edwenil favorably modified the course of the disease, some of the characteristics in the differential count which indicate recovery from infection would manifest themselves. In the summary of the differential white cell study presented in table 5, no important differences were noted between the rabbits treated with Edwenil and the controls. Likewise, when differential white cell counts of the rabbits that recovered from their infections were studied, no important differences were noted between the treated and the control animals. We are forced to conclude, therefore, that Edwenil did not influence in any way the differential cell count of rabbits infected with either the staphylococcus or the pneumococcus.

TABLE 5.—*Average Differential White Blood Cell Counts of Infected Rabbits Treated with Edwenil and Controls*

Normal	Immature Neutrophils 5.9		Mature Neutrophils 28.6		Lymphocytes 58.2		Eosinophils 0.9		Basophils 2.2		Monocytes 4.5	
	Treated	Controls	Treated	Controls	Treated	Controls	Treated	Controls	Treated	Controls	Treated	Controls
24 hours after infection	26.5	23.3	24.2	30.6	41.1	35.8	0.2	0.7	4.2	3.1	3.6	6.5
48 hours after infection	23.2	19.6	22.6	27.8	42.2	39.3	0.5	0.3	5.3	6.6	6.2	6.3
3-4 days after infection	26.5	24.1	22.1	27.1	43.4	39.0	0.7	0.7	3.2	4.8	4.0	4.3
5-8 days after infection	20.9	18.1	25.0	27.5	46.3	33.8	0.5	0.1	2.7	14.6	4.6	5.8
9th day or later	27.3	29.5	27.2	31.5	35.1	29.5	1.0	0.0	2.9	1.9	6.4	7.6

ADDITIONAL STUDIES CARRIED OUT WITH EDWENIL

The thirty rabbits outlined in table 2 were also followed during the course of their illness with blood cultures, agglutination tests and phagocytosis studies, and comparisons were made with similar tests carried out before the animals were infected. The results are as follows:

Blood Cultures.—Blood cultures were carried out daily on each of the thirty animals for the first few days and at longer intervals thereafter. Some of the animals eliminated the organisms from the blood stream very rapidly, while others continued to have positive blood cultures either throughout the course of the disease or for several days after infection. No significant difference in this respect was noted between those treated with Edwenil and those kept as controls. Likewise, the number of organisms per cubic centimeter found in the blood cultures was similar for the treated and the untreated groups of animals.

Agglutination Studies.—Agglutination tests between the rabbit's serum and the infective organism were carried out at frequent intervals throughout the course of the disease. While most of the rabbits infected with the pneumococcus did not live long enough to develop demonstrable agglutinins, two treated animals did develop them, one to a titer of 1:160 on the eighth day and one to a titer of 1:80 on the fifteenth day. Both of these animals later died from the infection. None of the controls in the group developed any demonstrable agglutinins.

Among the animals infected with the staphylococcus, two of the treated animals developed agglutinins, one to a titer of 1:40 on the forty-fourth day and the other to 1:160 on the eighth day. The first animal recovered and the second one died of the infection. In the control group that was infected with the staphylococcus, one developed agglutinins to a titer of 1:40 on the forty-fourth day and the other to a titer of 1:40 on the eighth day. The first of these died of the infection, while the second recovered.

From this study, no evidence was obtained that Edwenil increased the capacity of the animals to form agglutinins for the organisms with which they were infected.

Phagocytosis.—Throughout the course of the disease, the thirty rabbits were followed frequently for the ability of their polymorphonuclear neutrophils to ingest the organisms with which the animals were infected. The method used was that advocated by Wright. Considerable variation was noted among the animals infected with the same organism. Phagocytosis was much more marked in the staphylococcus infected group than in the pneumococcus infected group, and in both groups of animals this capacity increased during the course of the disease. However, there was not the slightest evidence that Edwenil increased phagocytosis in any way.

COMMENT

Through pamphlets circulated by the marketers and small medical publications, wide claims have been made for Edwenil as a therapeutic agent based on experiments with infected laboratory animals. We have attempted to repeat the most promising of these experiments and have been unable to find any evidence whatever for the claim that Edwenil protects

infected laboratory animals from lethal doses of Staphylococcus aureus and of pneumococcus type I. In addition, our rabbits were studied intensively throughout the course of their disease by white cell counts, blood cultures, agglutination tests and studies on phagocytosis, and we were unable to find the slightest evidence that Edwenil increased the immunologic responses of these animals.

CONCLUSIONS

1. Studies of the effects of Edwenil on mice and rabbits infected with pneumococci or staphylococci were carried out.

2. The course of infection and mortality of these animals were not affected by injections of Edwenil.

3. During extensive immunologic studies on the infected animals, no beneficial effects were observed from the use of this substance.

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLE HAS BEEN ACCEPTED AS CONFORM TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary.

KINNEY'S YEAST EXTRACT CONTAINING VITAMIN B COMPLEX.—A mixture of the water soluble extractive of dried brewers' yeast preserved by the addition of ½ volume of glycerin-U. S. P. and ½ volume of simple syrup-U. S. P. It is biologically assayed to contain in each cubic centimeter 25 international units of vitamin B_1 and 10 Sherman-Bourquin units of vitamin G.

Actions and Uses.—Kinney's yeast extract containing vitamin B complex is proposed for prophylaxis and treatment of conditions arising from deficiency of the vitamin B complex in the diet (see general article Vitamins and Vitamin Preparations for Prophylactic and Therapeutic Use, N. N. R., 1937, p. 446, under Vitamin B).

Dosage.—Infants 2 cc. (½ fluidrachm), adults 8 cc. (2 fluidrachms) daily.

Manufactured by Scientific Sugars Co., Indianapolis. No U. S. patent or trademark.

Kinney's vitamin B extract is prepared by extracting especially cultured dried brewers' yeast in an aqueous medium under proper conditions of *p*H control. The extract is concentrated, clarified, and preserved with equal parts of glycerin-U. S. P. and simple syrup-U. S. P.

The vitamin B_1 content is determined by comparison with the International Standard according to the Cowgill Pigeon Weight Maintenance Technic as outlined in "The Vitamin B Requirement of Man" by Cowgill, chapter IV. At regular intervals, samples are also compared with the International Standard according to the rat growth method of Sherman and Spohn as outlined in "The Vitamins" by Sherman and Smith, edition 2, page 99.

The vitamin G content is determined by the Sherman-Borquin Method as outlined in "The Vitamins" by Sherman and Smith, edition 2, page 133.

The glycerin content is estimated according to the method described in "Methods of Analysis" A. O. A. C., 1930, page, 302, chapter XXVIII, paragraph 55.

CORRECTION

Through error in the descriptions of several capsules and tablets of digitalis prepared by the McNeil Laboratories (THE JOURNAL, April 24, 1937, p. 1410) the potency is given in "cat units." The products are standardized by the frog and the guinea-pig methods and not by the cat method. The description should therefore read:

DIGITALIS (See New and Nonofficial Remedies, 1937, p. 180).

The following dosage forms have been accepted:

Tablets Digitalis Duo-Test McNeil, ½ grain (⅓ U. S. P. Digitalis unit): Dispensed in plain tablets.

Tablets Digitalis Duo-Test McNeil, 1 grain (⅔ U. S. P. Digitalis unit): Dispensed in plain and enteric coated tablets. The enteric coated tablets are first coated with a wax-salol mixture and then sugar-coated green.

Tablets Digitalis Duo-Test McNeil, 1½ grains (1 U. S. P. Digitalis unit): Dispensed in plain and enteric coated tablets. The enteric coated tablets are first coated with a wax-salol mixture and then sugar-coated green.

Capsules Digitalis Duo-Test McNeil, 1½ grains (1 U. S. P. Digitalis unit): Dispensed in black capsules.

Prepared by the McNeil Laboratories, Inc., Philadelphia.

Council on Foods

THE COUNCIL ON FOODS HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT. FRANKLIN C. BING, Secretary.

FLEISCHMANN'S YEAST NOT ELIGIBLE FOR THE LIST OF ACCEPTED FOODS

Fleischmann's Yeast is distributed by Standard Brands, Incorporated, New York. The fresh, compressed yeast is sold in small packages called "cakes." Each cake, weighing about 12.5 Gm., is wrapped in tin foil. The product consists essentially of a viable strain of yeast and is used for various culinary purposes. In 1922 E. M. Bailey, Helen C. Cannon and H. J. Fisher at the Connecticut Agricultural Experimental Station reported the approximate composition of the product to be moisture 65.4 per cent, ash 2.83 per cent, total nitrogen 1.15 per cent, water soluble nitrogen 0.37 per cent, water insoluble nitrogen 0.87 per cent, starch present. The average weight of the fresh cakes examined was 13.8 Gm. The Connecticut investigators at that time reported Fleischmann's Yeast to be a poor source of vitamin B (complex) as compared with dried brewers' yeast even though allowance was made for the moisture content of the fresh product. It is now generally recognized that the vitamin B content of yeast depends to a large extent on the substrate on which the yeast cells are cultured and there is no doubt that Fleischmann's Yeast could be a better source of vitamins B_1 and G in 1937 than it was in 1922.

Label.—If one examines the label of the product in search of more recent information about the vitamin content, there is little information to be found. The label on the small cakes states merely that the product supplies vitamins A, B, D and G and that cereal or tapioca flour and primary vitamin A are added. The label bears the additional information, in red letters, to "Eat 3 cakes daily—before meals."

The Council on Foods has classed fresh compressed yeast among the so-called special purpose foods. The vitamin B_1 and vitamin G potency of acceptable brands of yeast must be determined by biologic assay and the number of units of each vitamin that one could expect to find in the product is required to be declared prominently on the label. One looks in vain for any label statement regarding the number of vitamin units that could reasonably be expected to be derived from Fleischmann's Yeast. It is stated only that the product supplies vitamins A, B, D and G. There are a number of other foods of which it could be stated truthfully that they supply these same vitamins, although one would have to know the amount present before deciding whether the quantity is sufficient to warrant mention in advertising. But quantitative information is lacking on the label of Fleischmann's Yeast. The product could be extremely variable and still be in accord with the present vague label declaration. There is lacking the assurance that a truly informative label might give that the potency of the product will be maintained irrespective of fluctuations in the cost of the primary vitamin A which is added or of the food substances on which the yeast cells are grown. Indeed, the label does not even indicate how much "filler" in the form of starch or cereal is added. Are small amounts of other ingredients added? How much vitamin D is present, and what is its source? These questions are not answered on the label.

DISCUSSION OF CLAIMS

Although the label of Fleischmann's Yeast bears little specific information, the advertising copy claims a great deal. The newer trend in advertising of this culinary product appears to be along nutritional lines. Claims are made for each of the vitamins and for the mixture said to be present in Fleischmann's Yeast. Comments on advertising that has appeared in recent numbers of popular magazines and newspapers may be divided for convenience into a discussion of the claims made for each of the vitamins and for the product as a whole.

Vitamin A.—Advertising emphasis has been placed on the supposed relationship between vitamin A and the frequency of

colds. Illustrations of a man in the act of sneezing are accompanied by the suggestion that the reader should let Fleischmann's Yeast help increase his daily supply of vitamin A and so help decrease the frequency of colds. The Cooperative Committee on Vitamins reviewed the evidence available in 1936 and said:

> It [vitamin A] certainly has not been shown to be specific in the prevention of colds, influenza and such infections nor has it been demonstrated that the ingestion of vitamin A far in excess of that necessary for normal body function and readily obtained from a properly selected diet is an aid in preventing various types of infection.

It is misleading to the public, therefore, to assert or imply that products containing vitamin A will aid in the prevention of colds.

Vitamin B.—If you have a "sagging stomach," poor digestion and "sluggish intestines" you are urged to add Fleischmann's Yeast to your regular diet to increase your supply of vitamin B. There is no adequate basis for such statements and the Council does not recognize these claims.

Vitamin D.—Reference is made in some recent advertising to the work that has been done on the rôle of vitamin D in tooth formation and in the maintenance of normal tooth structure. The Council takes no objection to such statements of fact provided the claim is not made that adequate vitamin D intake will insure normal tooth structure or will prevent dental caries.

Vitamin G.—One particularly objectionable claim that has appeared in recent advertising is concerned with statements made for vitamin G. One illustration shows a thin, round-shouldered, undernourished child with the caption "Too little vitamin G means poor growth." For contrast the picture of a taller, apparently well nourished child, standing erect and looking alert is presented with the heading "Diet ample in vitamin G." The explanatory text states that Fleischmann's Yeast is very rich in vitamin G, that children from 5 to 12 years of age can be given one to two cakes daily. The obvious implication is that a thin, underweight child—perhaps one reported by a school physician as "malnourished," perhaps a tuberculous child not seen by a physician—can be made well and strong by eating Fleischmann's Yeast. It is the opinion of the Council that a poorly nourished child requires the attention of a family doctor rather than the dietary advice of the Fleischmann Yeast Company.

Claims for the Mixture of Substances That Comprise Fleischmann's Yeast.—Dietary advice of dubious accuracy appears to be an important feature of some of the current advertising for Fleischmann's Yeast. An advertisement which appeared in a recent number of a national woman's magazine has for a heading "You can't count on meals alone for vitamins you need." Another advertisement has for a heading "Many diets short in vitamins." The thesis that one cannot depend on meals alone for vitamins depends on the foods chosen. A proper selection of the diet will insure a sufficient intake of all the vitamins that an adult requires. Infants and small children need some vitamin D other than can be supplied in ordinary foods and there is available a variety of acceptable preparations which declare the unitage of vitamin D and thus enable the required dosage for the individual infant or child to be prescribed.

Fleischmann's Yeast is said to be "the only natural food that furnishes such an abundant supply of all four of these vitamins (A, B, D and G) at once." The meaning of the expression "natural food" is certainly not clear when applied as it is here to a mixture of yeast cells treated to give a vitamin D activity, cereal or tapioca flour and carotene.

Illustrations of athletes are presented with the comment that their sturdy build shows they are abundantly supplied with "the four important health-building vitamins A, B, D and G." The use of the phrase "the four important health-building vitamins" would seem to imply that nothing else need be considered in the diet. No mention is made of vitamin C nor is any mention made of calories or protein or other dietary essentials or the countless other factors involved in the maintenance of good health in addition to the four vitamins A, B, D and G.

For some time Fleischmann's Yeast has been promoted with the claim that its ingestion would sweep out poisons from the blood.

> "Eat it regularly," says Dr. R. E. Lee, well-known physician, "and Fleischmann's Yeast will help clear up adolescent pimples."
>
> Pimples put an end to popularity for many girls and boys after the start of adolescence—from about 13 to 25, or even longer. . . . Fleischmann's Fresh Yeast is helpful in clearing up a pimply skin, because it clears these skin irritants out of the blood. Eat three cakes every day—one or two cakes cannot do the work.

As far as the Council on Foods is aware, there is no adequate evidence in support of the claim that eating Fleischmann's Yeast will "help clear up adolescent pimples," and the Council does not recognize any therapeutic claim of this nature for any brand of fresh yeast.

SUMMARY

There are now available on the open market a number of fresh and dehydrated yeast preparations which are advertised conservatively with claims based on the actual composition of the product. Fleischmann's Yeast in contrast is sold with grossly exaggerated or unwarranted claims. The Council on Foods voted, therefore, that Fleischmann's Fresh Compressed Yeast be declared ineligible for the list of accepted foods because it is inadequately labeled and is promoted with exaggerated or misleading claims.

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COUNCIL ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION AND WILL BE LISTED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED.

FRANKLIN C. BING, Secretary.

CHOC-LADE DAIRY DRINK POWDER

Manufacturer.—Siren Mills Corporation, Chicago.

Description.—Powdered mixture of cocoa, starch-free powdered cane sugar, vegetable emulsifying agent, salt and vanillin flavoring.

Manufacture.—The ingredients in formula proportions are mechanically mixed for forty-five minutes and packaged.

Analysis (submitted by manufacturer).—Moisture 0.0%, ash 2.1%, fat 9.2%, protein (N × 6.25) 9.2%, sucrose 27.9%, crude fiber, 2.6%, carbohydrates other than crude fiber (by difference) 76.9%, caffeine and theobromine 0.94%.

Calories.—4.27 per gram; 121 per ounce.

Claims of Manufacturer.—For preparation of special Choc-Lade beverages in accordance with specific license contracts and conditions of preparation.

FORT WESTERN BRAND HAWAIIAN PINEAPPLE, SLICED, CRUSHED AND DAINTY SECTIONS

Distributor.—Holmes-Swift Company, Augusta, Maine.

Packer.—Hawaiian Pineapple Company, San Francisco.

Description.—Canned pineapple packed in concentrated pineapple juice with added sucrose; the same as Dole Hawaiian canned pineapple products (THE JOURNAL, April 8, 1933, p. 1106; April 29, 1933, p. 1338, and April 4, 1936, p. 1166).

COLONIAL FLOUR, PHOSPHATE ADDED

Distributor.—C. B. Ragland Company, Nashville, Tenn.

Manufacturer.—Blish Milling Company, Seymour, Ind.

Description.—An "all purpose" "short patent" flour milled from soft wheat; bleached; phosphate added; the same as Colonial Flour, Phosphate Added (THE JOURNAL, May 22, 1937, p. 1801).

FI-NA-ST BRAND TOMATO JUICE

Distributor.—First National Stores, Inc., Boston.

Packer.—Curtice Brothers Company, Inc., Rochester, N. Y.

Description.—Canned tomato juice seasoned with salt, retaining in high degree the natural vitamins. The same as Blue Label Tomato Juice (THE JOURNAL, April 24, 1937, p. 1410).

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, JULY 24, 1937

FURUNCLE OF THE FACE

The problem of proper therapy of the facial furuncle is apparently far from settled. Recent contributions to the subject resort to the time honored custom of proving the case by statistics. Among the fallacies of the statistical method, none is more apparent than the comparing of results obtained in treatment by dissimilar groups. Ayres, Anderson and Foster [1] report the results of a questionnaire sent to 250 dermatologists and to an equal number of surgeons. Dermatologists, it seems, tend toward conservatism in the treatment of carbuncles, whereas surgeons are more inclined to use radical procedures. The majority of surgeons employ crucial incisions or cautery excisions of carbuncles, whereas the majority of dermatologists employ conservative methods, including x-rays, vaccines, bacteriophage and topical applications. The mortality from carbuncles is low in both groups, but it is more than three times as great under surgical as under dermatologic treatment. Cases of infection of the face coming to the surgical clinic, however, are usually of a more severe type than those seen by the dermatologist.

Most infections about the lip and face heal spontaneously under any type of treatment. There is, however, the potential danger of grave and even fatal complications. Infections of that portion of the face which includes the lips, nose, chin, lids and forehead are regarded as most likely to give rise to grave complications. Among these, furuncles of the upper lips and the nares give the highest percentage of fatal complications. The common etiology of a furuncle is the combination of lack of cleanliness with irritation and the ever present staphylococcus. The spreading potentialities of the facial carbuncle are due to the anatomic and physiologic peculiarities of the soft tissues of the face. The skin of the central portion of the face differs functionally from the rest of the skin in that it participates in facial mimicry. The particular anatomic arrangement consists in the muscles of expression taking their origin from the bones of the face and inserting directly into the deep portions of the skin. The facile play of these muscles is further aided by the fact that they are not enclosed within stiff fascial sheaths. They are, instead, surrounded by loose subcutaneous tissue. The absence of fascial partitions and the almost constant movement of the overlying skin are potent factors in aiding the spread of an infection by continuity. Underlying these muscles of expression and mastication is a rich network of veins, likewise surrounded by loose connective tissue. These veins, according to Coller and Yglesias,[2] present certain structural anomalies such as the absence of valves and the relative rigidity of their walls. The inflammatory process involves the veins by compression and formation within them of septic thrombi. The thrombophlebitic process of the central portion of the face can extend in two directions: (1) by way of the nasal veins, the superior labial, the angular vein and its anastomosis with the superior and inferior ophthalmic veins into the cavernous sinus or (2) by way of the anterior facial vein, the common facial and the internal jugular vein into the general circulation. The resulting cavernous sinus thrombosis, meningitis, brain abscess or septicopyemia are almost always fatal.

Consensus of dermatologists and surgeons alike favors the conservative plan of treatment of at least the early and the benign infections of the face. Infectious lesions of the face, particularly those about the upper lip and the nose, should not be traumatized. The temptation to squeeze a pimple or to destroy it by a chemical substance may easily lead to the spread of infection, first by continuity and next by way of the blood stream. The principles underlying the conservative treatment may be summarized in (1) rest and (2) stimulation of the local and general defense mechanisms. The patient is put to bed in a hospital and speech is interdicted. He is fed fluids, preferably by gavage, so as to eliminate the process of chewing. Appropriate sedatives, analgesics and hypnotics are indicated to control the pain and insure rest and sleep. Specific immunization is best accomplished by intravenous administration of autogenous vaccines. Neither the method of autohemotherapy advocated by Bier nor that of Laewen of injecting blood into the healthy tissue about the carbuncle has gained much favor in this country. Roentgen irradiation appears to be capable of aborting many of the early infections and of promoting the breaking down and localization of the more advanced lesions. The roentgen rays are not in themselves bactericidal. The favorable action is believed to be due to the breaking down of certain radiosensitive cells and the consequent liberation of powerful antitoxic substances. Hot, wet applications, the old fashioned hot flaxseed poultices, tend to relieve pain

1. Ayres, Samuel, Jr.; Anderson, N. P., and Foster, P. D.: Dermatologic versus Surgical Treatment of Carbuncles and Furuncles, J. A. M. A. **108**: 858 (March 13) 1937.

2. Coller, F. A., and Yglesias, Luis: Infections of the Lip and Face, Surg., Gynec. & Obst. **60**: 277 (Feb. 15) 1935.

and to limit the infection. The tendency is not to incise the early lesions but to wait until the infection "comes to a head"; in other words, until the pus comes to the surface of the skin, or until there is fluctuation. This is perhaps the most widely accepted plan despite the few objectors. Foote,[3] for example, does not consider the furuncle of the face as being different from that in any other location. He insists that a prompt incision offers the best chance to check the infection locally and to limit its spread.

In a fortunately small percentage of the cases, infection is fulminant from the very beginning or may take on a grave form after an apparently mild initial course. It is manifested by advancing edema, increasing induration about the furuncle, tenderness along the dilated larger venous trunks, increase in pain, fever and signs of general intoxication. Among the many surgical interventions advocated for the treatment of these complications may be mentioned crucial incisions with the cautery knife and undercutting of the edges, wide excision of the carbuncle with an electrocautery knife, ligation of the angular vein to prevent extension of the septic thrombosis into the cavernous sinus and, finally, the exposure and evacuation of the contents of the cavernous sinus in the presence of symptoms suggesting its development. In view of the rich venous anastomosis, ligation of the angular vein appears to be of doubtful value. Lexer advises ligation of the internal jugular vein as the first step in the treatment of a malignant infection of the lower lip and the chin. The prophylactic injunction not to squeeze or prick a pimple, no matter how small, together with prompt institution of the conservative treatment, will probably limit the number of grave cases to a minimum.

3. Foote, E. M.: Local Surgical Treatment of Infections of the Face, Am. J. Surg. **6**: 438 (April) 1929.

IRON METABOLISM IN EARLY INFANCY

Iron is essential for the growth and development of the human infant. At birth, considerable amounts of iron are stored in the liver [1] and to a lesser extent in other tissues, to insure an adequate supply of this element for the formation of new hemoglobin and body tissues during the period of nursing. If a sufficient store of iron is lacking, severe anemia develops far in excess of the "physiologic anemia" usually found during the first year of life. Such a condition is sometimes observed in premature infants in whom the amount of reserve iron is deficient because of the shortened period of access to the maternal supply of iron, and in full term infants whose reserve supply of iron is low because of a deficiency of this element in the maternal organism during gestation.

The liver has been generally regarded, heretofore, as the chief site for the storage of iron during the fetal period. Recently, however, evidence has been produced indicating that this is not the case.[2] A study of data in the literature on the nonhemoglobin iron content of the liver of the human infant at birth shows that the amount of this element stored is not as large as might be expected, the quantity varying from a negligible trace, if the diet of the mother has been low in iron, to a maximum of possibly 60 mg. By 6 months of age the amount of reserve iron in the liver appears to be reduced to approximately 15 mg., thus indicating that 45 mg. has been utilized. However, the average amount of new hemoglobin formed during this period would require by itself, exclusive of the iron needed for muscle and tissue growth, at least 80 mg. The amount of iron stored in other tissues could not meet this need and it could not be supplied from an exclusive milk diet. Indeed, balance studies made on infants during the first two months of life [2] show that there is a negative iron balance, the total average excretion of the element exceeding by 50 to 75 mg. the dietary intake. During the next four months the infant remains practically in iron equilibrium.[3] Thus it is necessary to account for at least 130 to 155 mg. of iron needed during the first six months of life, and of this amount no more than 45 mg. is supplied by the liver.

The question appears to be reasonably answered by hematologic studies made on infants during early infancy.[2] The hemoglobin content of the blood of the human infant at birth is exceedingly high, averaging from 22 to 23 Gm. per hundred cubic centimeters, and during the first few weeks of life there is a rapid decrease in the value, a "physiologic anemia" developing. A level of from 10 to 12 Gm. of hemoglobin per hundred cubic centimeters of blood is usually observed by the sixth to the eighth week after birth. The amount of iron released by the destruction of hemoglobin during this period has been calculated and has been found to be approximately 250 to 300 mg. Since, as was pointed out, only 50 to 75 mg. of "extra" iron is lost in the excreta during this period, it is obvious that the iron from the destroyed hemoglobin is efficiently conserved and that this iron, rather than stored liver iron, forms the major reserve supply of this element in the human infant.

Although the conservation of iron from excess hemoglobin destroyed during the first few weeks of life is relatively efficient, the fact that the average total loss of iron, in excess of the intake, is from 50 to 75 mg. during the first two months of life cannot be disregarded. In the cases of infants fed cow's milk, who frequently show a negative iron balance during the entire first six months of life, infants whose mother's diet has been deficient in iron during gestation, and premature infants, it would seem desirable to supply some additional source of dietary iron at an early age, preferably well before the infant is 6 months old.

1. Iron in Nutrition, White House Conference Reports, New York, Century Company, 1932, part III, Nutrition, p. 225.

2. Stearns, Genevieve, and McKinley, J. B.: The Conservation of Blood Iron During the Period of Physiological Hemoglobin Destruction in Early Infancy, J. Nutrition **13**: 143 (Feb.) 1937.

3. Stearns, Genevieve, and Stinger, Dorothy: Iron Retention in Infancy, J. Nutrition **13**: 127 (Feb.) 1937.

Current Comment

THE TRUTH ABOUT EDWENIL

For several years THE JOURNAL has had many inquiries about Edwenil. The almost unlimited claims made in advertising broadcast by the distributor, Spicer & Co., aroused the curiosity of physicians. In 1933 the Council on Pharmacy and Chemistry rejected the product but has recently given it reconsideration. The report of the Council's latest consideration appears on page 272 of this issue. The reaffirmation of the Council's rejection is sustained by the excellent paper of Dr. Stainsby and his associate, which is appended to its report. Based as it is on a complete and scientifically conducted refutation of the bulk of evidence offered for Edwenil, the Stainsby report reduces the propaganda of the distributor to the level of quackery at worst or of extreme overoptimism at best. It is possible definitely to class most of the claims for Edwenil as false, unwarranted or unsupported. The authors were unable to find the slightest evidence that Edwenil increased the immunologic response of the animals used in their studies.

IMPROVED POLLEN ANTIGENS

Relatively inert aqueous pollen extracts can be changed to highly efficient vaccines by alcohol precipitation, according to the unconventional conclusion reported by Manteufel and Kühne [1] of the Hygienic Institute, Düsseldorf. From the previous failures to sensitize or immunize guinea-pigs or rabbits by the use of native aqueous pollen extracts van Leeuwen and others [2] concluded that pollen allergy is not a clinical phenomenon similar to experimental anaphylaxis in laboratory animals. Recently, however, Haag,[3] of Dr. Manteufel's laboratory, showed that an occasional guinea-pig can be actively sensitized to native aqueous pollen extracts if sufficiently large doses and sufficiently long incubation periods are adopted. Haag found that this borderline antigenicity of native pollen extracts could not be increased by concentration of the aqueous extract by partial evaporation. These immunologists also studied the effects of concentration (or fractionation) of aqueous extract by alcohol precipitation. The precipitate thus formed was taken up as a colloidal suspension in sodium chloride solution. The suspension contained no macroscopically visible particles. Repeated intraperitoneal injections of 0.5 cc. of the resulting 0.2 per cent precipitate suspension invariably sensitized guinea-pigs to homologous pollens. When reinjected eight weeks later with homologous antigens, approximately a third of the animals reacted with typical fatal anaphylaxis. The remaining two thirds showed from mild to severe typical nonfatal shock. Control groups of guinea-pigs injected with native (or undenatured) aqueous pollen extracts were not demonstrably sensitized. The authors found that the incubation period for sensitization to precipitated antigen is approximately two months. Maximum sensitivity was not reached till the sixth to the eighth month. In their hands sensitivity thus conferred was not serologically transferable and all attempts to produce classic passive anaphylaxis gave negative results. Young born to mothers sensitized from four to five months previously, however, were invariably highly hypersensitive. The authors predict that similar methods of alcoholic fractionation (or purification) will become applicable to the preparation of some bacterial vaccines.

1. Manteufel, P., and Kühne, G.: Ztschr. f. Immunitätsforsch. **89:** 362 (Dec. 7) 1936.
2. Van Leeuwen, W. S.; Bien, Z., and Varekamp, H.: Ztschr. f. Immunitätsforsch. **37:** 77, 1923.
3. Haag, F. E.: Klin. Wchnschr. **14:** 264 (Feb. 23) 1935.

TYPHOID LEUKOCIDIN

According to Dennis and Senekjian [1] of the department of bacteriology at the American University of Beirut School of Medicine, Lebanon, the typhoid bacillus forms or secretes a powerful enzymic factor having a selective toxic action on neutrophilic granulocytes. In their opinion this newly discovered leukocidin may be responsible for the characteristic leukopenia in typhoid fevers, for depletion of myelopoietic elements in the bone marrow and for the absence of cellular infiltration about foci of typhoid infection. To demonstrate leukocidic activity of typhoid bacilli the Beirut investigators mixed heparinized rabbit and nonimmune human blood with an equal volume of varying dilutions of the filtrate from twenty-four hour veal infusion broth cultures of Eberthella typhi and incubated the resulting mixtures at 37 C. in a rotating box for sixty minutes. Toxic or lytic action was demonstrated in the incubated mixtures by routine differential blood counts. Lytic action was deduced from observed reductions in the total number of leukocytes per cubic millimeter and by visible degeneration changes in nonlysed cells. When a potent typhoid filtrate was tested a 50 per cent reduction in the total leukocyte count was usually noted by the end of sixty minutes, as compared with control mixtures of veal infusion broth and human or rabbit blood. The neutrophilic granulocyte was the only cell type thus reduced. Differential counts showed neutrophilic lysis in dilutions as high as 1:1,000 of typhoid filtrate, with destructive activity in dilutions as high as 1:10,000. The typhoid leukocidin is reduced 50 per cent in potency by heating to 85 per cent for sixty minutes and completely inactivated by heating to 100 C. for two hours. The active principle readily passes the Berkefeld, Chamberland and Seitz filters. The active lytic principle may be precipitated from a typhoid filtrate by the addition of three volumes of 95 per cent alcohol in the cold. This is the conventional method for precipitation and concentration of streptococcus fibrinolysin and numerous other bacterial enzymes.[2] The dried precipitate thus obtained can be kept for at least a year without appreciable loss of potency. The lytic factor is neutralized in vitro by specific antityphoid serums. A good antiserum may contain as many as 50,000 arbitrary neutralizing units per cubic centimeter. The authors found no qualitative or quantitative differences between the leukolytic activity of different strains of typhoid bacilli; filtrates from paratyphoid A and B, however, showed relatively little leukocidal activity.

1. Dennis, E. W., and Senekjian, H.: Proc. Soc. Exper. Biol. & Med. **36:** 61 (Feb.) 1937.
2. Tillett, W. S., and Garner, R. L.: J. Exper. Med. **58:** 485 (Oct.) 1933.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ALABAMA

Medical Talks at Howard College.—A series of talks on public health was instituted June 28, in a forum on contemporary problems at Howard College, Birmingham. The first lecture was given by Dr. James N. Baker, Montgomery, state health officer, on "Public Health Administration." Other lecturers included:

Reuben T. Crawford, D.D.S., Montgomery, chief, division of oral hygiene, state department of health, Oral Hygiene in the State Health Program.

Dr. Judson D. Dowling, Birmingham, health officer of Jefferson County, Disease Control.

Dr. George A. Denison, Birmingham, director, Jefferson County public health laboratories, Public Health Laboratories.

Dr. John A. Keyton, Dothan, Ear, Eye, Nose and Throat Surgery in Relation to Public Health.

James L. Brakefield, Ph.D., professor of biology, Howard College, Birmingham, The Layman in Public Health.

ARKANSAS

Society News.—At a recent meeting of the Randolph-Lawrence County Medical Society in Black Rock, Dr. Matthias A. Blatz, Pocahontas, discussed "Endocrine Troubles Peculiar to the Female," and Dr. Franklin A. Gray, Batesville, "Precancerous Conditions."——A symposium on diseases of the gallbladder was recently presented before the Pope-Yell County Medical Society in Russellville by Drs. Roy I. Millard, Robert H. Hood and Louis M. Smith.——Speakers before the Tri-County Clinical Society at Hope, recently, were Drs. Theodore M. Oxford, Shreveport, on "Fracture of the Hip"; Robert T. Lucas, Shreveport, "Diarrhea," and James G. Martindale, Hope, "Addison's Disease, Atrophic Type" (case report).——The Miller County Medical Society was addressed, May 26, by Drs. William A. Hutchinson, Texarkana, on "Endocrinological Treatment of Dysmenorrhea" and Thomas F. Kittrell, Texarkana, "Treatment of Appendicitis and Peritonitis."——At a meeting of the Benton County Medical Society in Bentonville, June 10, Dr. Burleigh E. De Tar discussed "Intestinal Obstruction"; Otto T. Blanke, "Allergy in General Practice," and Marvin C. Davis, "The More Common Communicable Diseases in Children"; all are of Joplin, Mo.

CALIFORNIA

Hospital News.—The new La Vina Sanatorium was dedicated, June 4, in Pasadena, as a memorial to Dr. Henry B. Stehman, who established the institution in 1909. The old sanatorium was destroyed by fire in October 1935.

Personal.—Mills College, Oakland, conferred the honorary degree of doctor of science on Dr. Olga L. Bridgman, professor of psychology and pediatrics, University of California Medical School, San Francisco.——Dr. John C. Sharp, San Jose, has been appointed director of public health of Monterey County.

DELAWARE

Dr. Shands Appointed Chief of Staff.—With the appointment of Dr. Alfred R. Shands Jr., associate professor of surgery in charge of orthopedics, Duke University School of Medicine, Durham, N. C., as chief of the medical staff of the proposed Nemours Foundation, actual organization activities have begun, newspapers have reported. The foundation was provided for in the will of the late Alfred I. Du Pont to establish a hospital and home for crippled children. It will also give aid to children suffering from other diseases. The first unit of the institution will cost about $1,000,000 and be situated on the Du Pont estate, near Blue Ball, on the Concord Pike. The will further provided that a certain amount of care be given to aged persons and that the bulk of the estate be used to maintain the foundation and research activities. Headquarters of the foundation will be in Jacksonville, Fla., where Mr. Du Pont died April 29, 1935. The entire resources of the foundation, comprising about $60,000,000, will be used for the treatment and care of crippled children. Dr. Shands, a native of Washington, D. C., and a graduate of the University of Virginia Department of Medicine, Charlottesville, in 1922, has been granted an indefinite leave of absence from Duke.

IDAHO

New Director of Public Health.—Dr. James W. Hawkins, formerly of Coeur d'Alene and recently head of the Twin Falls County health unit, has been appointed director of public health of Idaho, it is reported, succeeding Dr. Jay D. Dunshee. According to the Boise *News*, Dr. Dunshee, who was appointed to the position when it was created in March, was not qualified because he was not a legal resident of the state at the time he took office. He went to Idaho in December 1935 as medical adviser.

ILLINOIS

Changes in Hospital Superintendents.—Dr. Arthur K. Drake has resigned as medical director of the Elmgrove Sanatorium, Bushnell, on account of ill health.——Dr. William J. Bryan, superintendent of the Missouri State Sanatorium, Mount Vernon, Mo., has been appointed superintendent of the Rockford Municipal Sanatorium, succeeding Dr. Robinson Bosworth, who resigned recently to take charge of the St. Clair County Sanatorium, now under construction at East St. Louis.

Chicago

Personal.—Paul N. Leech, Ph.D., Secretary, Council on Pharmacy and Chemistry, American Medical Association, gave the commencement address at the Philadelphia College of Pharmacy and Science, June 9; his subject was "Intelligent Questioning."——Leslie B. Arey, Ph.D., Robert Laughlin Rea professor of anatomy, Northwestern University Medical School, received the honorary degree of doctor of science from Colby College, Waterville, Maine, at its one hundred and sixteenth commencement.

Society News.—Sewall Wright, Sc.D., professor of zoology, University of Chicago, will address a joint meeting of the Institute of Medicine of Chicago and the Chicago Society of Internal Medicine, October 25, on "The Hereditary Factor in Abnormal Development."——The Chicago State Hospital was host to the Irving Park Branch of the Chicago Medical Society recently. In addition to Dr. Edward F. Dombrowski, managing officer, other speakers included Drs. Frank S. Rankin on "Sleep Induced by Sodium Amytal in Psychotic Patients"; Hyman H. Goldstein, "Traumatic Psychoses," and the late Barnet Lemchen, "Brain Pathology and Mental Alienation."

INDIANA

Dr. Page Joins Hospital Staff.—Dr. Irvine H. Page, associate, Hospital of the Rockefeller Institute for Medical Research, New York, will assume charge of the research department of the Indianapolis City Hospital, September 15, according to the Indianapolis *Star*. He will be retained for the post by Eli Lilly & Co., which cooperates with the hospital in laboratory and research work. Dr. Page was born in Indianapolis, and is an alumnus of Cornell University Medical College, New York.

IOWA

Rocky Mountain Spotted Fever.—During June ten cases of Rocky Mountain spotted fever with three deaths were reported to the state department of health. Three cases occurred in Clark County, one in Jackson County and six among Indians at the Sac and Fox reservation in Tama County.

Society News.—A recent meeting of the Pottawattamie and Woodbury county medical societies, Council Bluffs, was addressed by Drs. Archibald F. O'Donoghue on "Modern Concepts in Treatment of Hip Fractures"; James E. Reeder, "Uses of High Frequency Audiometer," and Raymond J. Harrington, "Electrocardiography in Relation to Clinical Heart Disease." The speakers are all of Sioux City.——Dr. James H. O'Donoghue, Storm Lake, was elected president of the Twin Lakes District Medical Society at its fifteenth annual assembly in Rockwell City, June 17, and Dr. Paul W. Van Metre, Rockwell City, was reelected secretary-treasurer.——A symposium on the clinical, gastroscopic and roentgenologic features of gastritis was presented before the Buchanan County Medical Society in Independence, June 17, by Drs. Byrl R. Kirklin, Andrew B. Rivers and Herman J. Moersch, all of Rochester, Minn.

KENTUCKY

Society News.—Drs. Morris M. Weiss and Aaron A. Shapero, Louisville, addressed the Jefferson County Medical Society, June 21, on "Syncope" and "The Common Cold" respectively.——Dr. Claude S. Eddleman addressed the Louisville Urological Society, June 15, on "Treatment of Calculi of Upper Urinary Tract."——Drs. William R. Davidson and William Donald Davidson, Evansville, Ind., addressed the

Christian County Medical Society, Hopkinsville, June 29, on "Emergency Treatment of Fractures" and "Recent Developments in Treatment of Fractures" respectively.

Dinner to Dr. Abell. — The Jefferson County Medical Society sponsored a testimonial dinner in honor of Dr. Irvin Abell, Louisville, President-Elect of the American Medical Association, July 1, at the Pendennis Club, Louisville. The speakers included Drs. William Barnett Owen, Louisville, president of the county society; James D. Northcutt, Covington, president of the Kentucky State Medical Association; Arthur T. McCormack, Louisville, secretary of the state association and state health officer, and William D. Haggard, Nashville, Tenn., former President of the American Medical Association. About 275 physicians of Indiana, Kentucky and Tennessee attended.

LOUISIANA

Dr. Cohn Joins Louisiana State Faculty.—Dr. Isidore Cohn, professor and head of the department of surgery, Graduate School of Medicine, Tulane University, New Orleans, has resigned to become professor of surgery and associate director of the department at the Graduate School of Medicine, Louisiana State University, New Orleans. A graduate of Tulane, 1907, Dr. Cohn has been associated with his alma mater since 1909. In 1935 he succeeded Dr. Rudolph Matas as chief of the department of surgery at Touro Infirmary, New Orleans.

MASSACHUSETTS

Honorary Degrees.—Amherst College, Amherst, conferred the honorary degree of doctor of science on Dr. Stephen Rushmore, Boston, recently, and Colby College, Waterville, Maine, a similar degree on Dr. Harris P. Mosher, also of Boston.——Lieut.-Col. James S. Simmons, Boston, received the degree of doctor of science from Davidson College, N. C., at its centennial exercises, June 8.

Funds Needed for Medical School.—A campaign is under way to create a $5,000,000 fund for Tufts College Medical School, according to the New York *Times*. The first step is to raise a fund of $2,000,000 for improvements in the medical school. The report stated that a surgical unit of from fifty to sixty beds is urgently needed to complete the New England Medical Center group, which is composed of the Boston Dispensary, the Boston Floating Hospital and the medical school.

MINNESOTA

Society News.—Dr. Francis S. Smyth, San Francisco, addressed the annual meeting of the Northwestern Pediatric Society, Minneapolis, May 17, on "Clinical Studies in Bone Salt Metabolism."——Dr. Higino Joaquim dos Santos, professor of surgery, University of Lisbon, Portugal, lectured at the Mayo Clinic, Rochester, June 24, on "Arteriographic Changes in Vascular Diseases, Arthritis and Tumors of the Extremities."

New Director of Hygiene.—Dr. Malvin Nydahl has been appointed director of hygiene of Minneapolis schools, succeeding Dr. Francis E. Harrington, city health commissioner. Dr. Nydahl will also be director of health education in the schools. Dr. Harrington resigned the post because of his added duties as acting superintendent of the General Hospital, it is reported. Dr. Nydahl graduated from the University of Minnesota Medical School in 1935.

MISSISSIPPI

Society News.—Dr. Paul H. Harmon, Chicago, addressed a joint meeting of the faculty of the University of Mississippi School of Medicine, the staffs of the Oxford hospitals and the Northern Mississippi Valley Medical Society at Oxford, May 21, on poliomyelitis. Dr. Harmon also showed a motion picture illustrating positions for convalescent treatment and surgical treatment of the disease.

MISSOURI

Dr. Johns Goes to Maryland. — Dr. George A. Johns, who recently resigned as superintendent of the St. Louis Training School, has accepted an appointment as superintendent of the Rosewood State Training School, Owings Mills, Md. In 1924 Dr. Johns resigned as superintendent of the City Sanitarium to become state health supervisor in charge of eleemosynary institutions. He later served as superintendent of the state hospital number 3, Nevada, of the state hospital number 2, St. Joseph, and again of the City Sanitarium, St. Louis.

Personal.—Dr. Leon Paul Forgrave, St. Joseph, has been appointed a member of the state board of health, succeeding Dr. William T. Elam, St. Joseph, whose term recently expired. ——Dr. Charles S. Austin, Carrollton, observed his completion of fifty years in the practice of medicine, May 1.——Dr. Joseph Erlanger, professor of physiology at Washington University School of Medicine, St. Louis, was awarded the honorary degree of doctor of science at the one hundredth annual commencement exercises of the University of Michigan.

MONTANA

Society News.—Dr. Thomas F. Walker, Great Falls, discussed "Myelogenous Leukemia" before the Silver Bow County Medical Society, June 1. The society was addressed at an earlier meeting by Dr. Harvey Lee Casebeer, Butte, who read a paper written by Dr. Peter Potter on "The Reticulo-Endothelial System."——Dr. E. Martin Larson, Great Falls, was recently elected president of the Montana Tuberculosis Association at its meeting in Helena.——The North Central District Medical Association of Montana was organized in May. The officers are Drs. Paul O. Neraal, Cut Bank, president; Herman F. Schrader, Browning, vice president, and Walter L. DuBois, Conrad, secretary-treasurer.

NEBRASKA

Clinical Meeting in Omaha.—The fifth annual assembly of the Omaha Mid-West Clinical Society will be held in Omaha, October 17-22, with headquarters at the Hotel Paxton. The following guest speakers have been announced: Drs. William L. Benedict, Rochester, Minn.; Willis D. Gatch, Indianapolis; Arthur Bruce Gill, Jacob P. Schaeffer and Edward A. Schumann, Philadelphia; Luther Emmett Holt Jr., Baltimore; Thomas Leon Howard, Denver; William J. Kerr and Hans Lisser, San Francisco; Thomas Parran, surgeon general, U. S. Public Health Service, Washington, D. C.; Hans H. F. Reese, Madison, and Owen H. Wangensteen, Minneapolis. There will also be lectures by members of the faculties of Creighton University and the University of Nebraska schools of medicine, clinics and scientific exhibits.

NEW JERSEY

Society News.—Dr. Charles H. de Turck Shivers, Atlantic City, addressed the Cumberland County Medical Society, Bridgeton, June 15, on diseases of the urinary tract.——Dr. Emanuel D. Friedman, New York, addressed the Bergen County Medical Society, Hackensack, June 15, on "Trauma and the Nervous System."——Dr. John A. Brooke, Philadelphia, addressed the Cape May County Medical Society, Ocean City, May 20, on "Fracture of the Neck of the Femur."

NEW YORK

Dr. Cunningham Appointed Dean at Albany.—Dr. Robert Sydney Cunningham, professor of anatomy at Vanderbilt University School of Medicine, Nashville, Tenn., has been appointed dean of Albany Medical College, Albany, to succeed Dr. Thomas Ordway. Dr. Cunningham is a native of South Carolina and graduated from Johns Hopkins University School of Medicine, Baltimore, in 1915. He was a member of the faculty of Johns Hopkins from 1915 to 1925, when he went to Vanderbilt as professor of anatomy. He will also hold a professorship of anatomy at Albany.

Three Outbreaks of Food Poisoning.—Three outbreaks of illness caused by contaminated food have been traced to a bakery in Troy since April 1936. At that time six cases occurred in persons who had eaten chocolate éclairs. In May of this year there were six cases of gastro-enteric disturbance in Troy and five in Rensselaer, all attributed to eating cream pies from this bakery. The third outbreak comprised twelve cases in Troy in June, attributed to the eating of strawberry cream pie. Investigation disclosed that the cream filled pastries supplied by the bakery in question were not subjected to refrigeration. The plant was found to be in satisfactory sanitary condition and no evidence was found of illness or skin lesions among the employees. The laboratory investigation had not been completed at the time of the report in *Health News*.

New York City

City Hospitals on Eight Hour Day.—The entire working force of the Department of Hospitals, except administrative officers, physicians and superintendents of nurses, was placed on an eight hour day July 1. The new arrangement changes the hours for nurses, attendants, cooks, household and kitchen helpers and ambulance drivers; some employees have been working on this schedule for some time. The change is made possible by an appropriation of $1,500,000 by the board of estimate. The department will require 2,793 additions to its personnel, including 1,281 graduate nurses and 349 hospital attendants or nurses' aids.

Knickerbocker Hospital Seventy-Five Years Old.—Knickerbocker Hospital celebrated the seventy-fifth anniversary of its founding at a luncheon at the Hotel Astor May 20, with Nicholas Murray Butler, Ph.D., president of Columbia University, as the principal speaker. Congratulatory messages from President Roosevelt and Governor Lehman were read. The hospital had its beginning in a tent set up by a young physician in 1862 to care for wounded and sick Union soldiers home from the Civil War. In May of that year the number of patients had grown so much that the Manhattan Dispensary was founded to care for them. The dispensary grew into a general hospital, known for many years as the J. Hood Wright Memorial Hospital and since 1913 as Knickerbocker Hospital, according to an account in the New York *Times*. It now has 175 beds.

NORTH CAROLINA

University Changes.—Evan W. McChesney, Ph.D., associate professor of biological chemistry, University of North Carolina School of Medicine, Chapel Hill, recently resigned to join the faculty of Baylor University College of Medicine, Dallas, Texas, with the same title. Dr. Augustus S. Rose, associate professor of anatomy, resigned to become assistant in neurology at Massachusetts General Hospital, Boston.

New Health Officers.—Dr. Sigma V. Lewis, Roxboro, has been appointed health officer of a district including Washington, Tyrrell and Hyde counties. —— Dr. Zack P. Mitchell, Bryson City, recently assistant health officer of Swain County, has been appointed health officer of a district comprised of Cherokee, Clay and Graham counties. Dr. Philip G. Padgett, Forest City, succeeded Dr. Mitchell in Swain County.

OHIO

Personal.—Dr. C. J. Altmaier, Marion, has been appointed a trustee of Ohio State University for a term of seven years. ——Dr. Lorin Kerr Jr., Toledo, has been appointed head of the bureau of medical relief and superintendent of the Municipal Hospital for Contagious Diseases in Toledo.——Dr. Marion A. Blankenhorn, Gordon and Helen Hughes Taylor professor of medicine, University of Cincinnati College of Medicine, received the honorary degree of doctor of science from Wooster College, Wooster, recently.——Dr. David F. Gerber, Middletown, received the alumni medal "for meritorious service to humanity" at the recent commencement of Miami University, Oxford. ——Dr. Carlyle W. Dewey, Conneaut, has been appointed a member of the state medical board.——Dr. Howard T. Karsner, director of the Institute of Pathology, Western Reserve University School of Medicine, Cleveland, has been elected a member of the medical advisory board of the Leonard Wood Memorial (American Leprosy Foundation).

Society News.—Dr. James K. Nealon, Newark, addressed the Carroll County Medical Society, Carrollton, June 3, on "Significance of Pus in the Urine."——Dr. John H. Skavlem, Cincinnati, addressed the Clermont County Medical Society, June 3, in Loveland, on "Chronic Nontuberculous Lung Infections."——At a meeting of the Clinton County Medical Society, Sabina, June 1, Dr. William L. Wead, Sabina, presented a paper on diseases of the arteries.——Dr. Carl V. Moore, Columbus, addressed the Miami and Shelby County Medical Society, Sidney, June 3, on "Anemia, Its Etiology and Treatment."—— Dr. Harve M. Clodfelter, Columbus, spoke on "Gallbladder and Associated Gastric and Intestinal Diseases" before the Marion Academy of Medicine June 1.——Drs. Thomas L. Ramsey and Edward J. McCormick, Toledo, addressed the Seneca County Medical Society June 16 in Fostoria, on pathology and surgery, respectively, of carcinoma.——Dr. John L. Stifel, Toledo, addressed the Wood County Medical Society, Bowling Green, June 17, on "Peripheral Vascular Disease."—— Dr. David Steel, Cleveland, addressed the Lorain County Medical Society, Lorain, June 8, on "Roentgen Ray Treatment of Malignancies."——At a meeting of the Columbus Academy of Medicine June 14, the speakers were Drs. Earl H. Baxter and Leslie L. Bigelow on the medical and surgical aspects, respectively, of abdominal pain in childhood, and Dr. Ralph I. Fried, on treatment of congenital syphilis.

PENNSYLVANIA

Society News.—Dr. Joseph H. Barach, Pittsburgh, addressed the Cambria County Medical Society, Johnstown, July 8, on "Clinical Application of Protamine Insulin."—— Speakers at a meeting of the Lycoming County Medical Society, Williamsport, July 9, were Drs. John Moore Campbell Jr., Harrisburg, on "The New Tuberculosis Program of the State Department of Health"; Reynold M. Grieco, "Newer Method of Diagnosis and Treatment of Pathologic Conditions of the Rectum," and Lloyd E. Wurster, "Deep Roentgen Therapy in Carcinoma of the Prostate and Its Metastasis."——Drs. Edgar S. Everhart and John R. Heller Jr. of the U. S. Public Health Service, and Albert F. Doyle, all associated with the state department of health, Harrisburg, presented a symposium on syphilis at a meeting of the Mifflin County Medical Society, Lewistown, June 3, and of the Blair County Medical Society, Altoona, June 22.

RHODE ISLAND

Society News.—At a meeting of the Providence Medical Association, June 7, Drs. Hugh E. Kiene and William M. Muncy spoke on "Survey of Seven Years Treatment at the Chapin Hospital" and "Eye Manifestations for Tryparsamid Reactions" respectively.——Dr. Charles L. Farrell, Pawtucket, addressed the Washington County Medical Society, Westerly, July 14, on "State Medicine."

Personal.—Dr. Ernest A. Charon, Manville, has been appointed health officer of Lincoln, succeeding the late Dr. Harry A. Manchester.——Dr. Francis V. Corrigan, Providence, assistant chief of the bureau of child hygiene in the state department of health for the past sixteen months, has been appointed chief, succeeding Dr. Marion L. A. Gleason, who retired. Dr. Gleason has served since 1923.——Dr. Michael J. O'Neil, Providence, has been appointed medical director of the state unemployment relief commission. He succeeds Dr. Henry J. Hoye.

SOUTH DAKOTA

Food Handlers to Be Examined.—A plan for examination of food handlers in Sioux Falls was recently instituted by the city health officer. Examinations are to be made every six months and are voluntary on the part of proprietors. Restaurants, groceries and meat markets that cooperate will receive cards certifying that all food handlers have certificates of health.

TENNESSEE

Tennessee Valley Association Meeting.—Dr. Elbert G. Wood, Knoxville, was chosen president-elect of the Tennessee Valley Medical Association at its meeting in Knoxville, June 23-25. Vice presidents elected are Drs. Ancil A. Richardson, Williamsburg, Ky., Glenn T. Foust, Norton, Va., and James Frank Pate, Canton, N. C. Dr. Jesse C. Hill, Knoxville, was reelected secretary. Dr. Edward A. Guynes, Knoxville, was installed as president. Among the speakers were Drs. George W. Crile, Cleveland; Hugh H. Young, Baltimore; Virgil E. Simpson, Louisville, Ky.; Willis C. Campbell, Memphis; Francis T. Hunter, Boston; James E. Paullin, Atlanta, Ga., and Leon J. Menville, New Orleans.

TEXAS

Hospital Head Appointed.—Dr. Edgar M. Dunstan, medical director of Baylor Hospital, Dallas, was recently appointed superintendent of the Dallas city and county hospital system to succeed Dr. James H. Stephenson, who became superintendent of the Jefferson Davis Hospital, Houston. Dr. Dunstan will have charge of Parkland General Hospital and the Woodlawn tuberculosis unit in Dallas and the Convalescent Hospital at Hutchins.

Premedical Fraternity Dinner.—The Texas Alpha chapter of Alpha Epsilon Delta, honorary premedical fraternity, recently gave a dinner at the University of Texas, Austin, for all Texas premedical students. More than 300 students and faculty members from eight Texas colleges and universities were present. Harry Y. Benedict, LL.D., president of the University of Texas, Austin, was toastmaster and guest speakers included Drs. Calvin R. Hanna, Dallas, president of the State Medical Association of Texas; Walter H. Moursund, dean, Baylor University College of Medicine, Dallas, and Edward H. Cary, Dallas, past president of the American Medical Association.

UTAH

Commonwealth Fund to Build Hospital.—The Commonwealth Fund of New York has awarded to Provo the tenth of its hospitals for rural areas, and will contribute $200,000 while the city will be required to raise about $75,000 for the hospital.

WASHINGTON

Personal.—Dr. John W. Adams, Waterville, has resigned as health officer of Douglas County.——Dr. John N. Alley, superintendent of Tacoma Hospital, Tacoma, operated by the U. S. Department of the Interior, has retired from that position and has been appointed to the staff of the Eastern State Hospital, Medical Lake.——Dr. Lawrence E. C. Joers, Tacoma, has been appointed health officer of Pierce County to succeed Dr. Hinton D. Jonez.

Rabies Quarantine in King County.—The increase of rabies in recent months led the state director of agriculture to establish quarantine regulations for dogs in King County, according to *Northwest Medicine*. Regulations require that dogs be vaccinated annually with rabies vaccine or else be confined on their owners' premises. Vaccinated dogs may be allowed freedom twenty-one days after their vaccination and they must wear metal tags to indicate to enforcement officers that they have been immunized. Dogs being removed from the county must be accompanied by certificates of vaccination. Any dog that has been bitten by a rabid dog must have the Pasteur treatment or be destroyed. If he has the treatment he must be kept in quarantine for ninety days. The quarantine is to remain in effect until June 30, 1939.

WEST VIRGINIA

Refresher Courses.—The state health department in cooperation with the West Virginia State Medical Association has provided refresher courses in obstetrics, pediatrics and venereal diseases in fifteen towns of the state. The series began July 12 and one meeting will be held in each location once a week for seven weeks. Drs. William J. Dieckmann and Morris Edward Davis, Chicago, and Everett D. Plass, Iowa City, are giving the lectures on obstetrics; Drs. Edwards A. Park, Baltimore, and George M. Lyon, Huntington, those on pediatrics. The lecturers on venereal disease had not been selected at the time of the announcement.

WISCONSIN

Personal.—Dr. Harold H. Fechtner, Wausau, has resigned as director of the Marathon County health unit, established in 1936, to resume private practice.——Dr. George Van Ingen Brown, Milwaukee, professor of plastic surgery, University of Wisconsin Medical School, Madison, has retired.

Bardeen Lecture.—The Charles R. Bardeen Memorial Lecture honoring the late dean of the University of Wisconsin Medical School, Madison, was presented May 24 at the university under the auspices of the Phi Chi fraternity. Dr. Jacob Arnold Bargen, Rochester, Minn., gave the lecture on "Recent Advances in Studies on Intestinal Disorders in Europe and America: Personal Observations."

PHILIPPINE ISLANDS

Hospital News.—The late Dr. Gregorio Singian left 350 mg. of radium, valued at $100,000, to the San Juan de Dios Hospital, Manila.——Dr. Gervasio Santos Cuyugan, for twelve years director of the Tayabas Provincial Hospital, has retired to enter private practice in Manila.

GENERAL

Examinations in Pediatrics.—The American Board of Pediatrics will hold fall examinations on the following dates:

Chicago, Sunday, October 17, following the meeting of region III of the American Academy of Pediatrics.
Los Angeles, Sunday, November 7, following the meeting of region IV.
Boston, Sunday, November 14, following the meeting of region I.
New Orleans, Tuesday, November 30, following the joint meeting of region III with the Southern Medical Association.

Obstetrics Board Examinations.—The American Board of Obstetrics and Gynecology announces that the next written examination and review of case histories of group B applicants will be held in various cities in the United States and Canada November 6. The next general examination for all candidates will be in San Francisco June 13-14, 1938, immediately before the meeting of the American Medical Association. Application blanks and booklets of information may be obtained from Dr. Paul Titus, secretary of the board, 1015 Highland Building, Pittsburgh. Applications must be filed not later than sixty days prior to the examination dates.

Society News—Dr. Edgar G. Ballenger, Atlanta, Ga., was chosen president-elect of the American Urological Association at its annual meeting in Minneapolis June 30, and Dr. David W. MacKenzie, Montreal, was installed as president. Dr. Clyde L. Deming, New Haven, was reelected secretary. ——Dr. Alphonse McMahon, St. Louis, was elected president of the American Therapeutic Society at the annual meeting in Atlantic City in June.—— The fifth annual meeting of the Western Orthopedic Association will be held in Seattle July 28-30 with headquarters at the Washington Athletic Club.—— The third annual meeting of the Mississippi Valley Medical Society will be held in Quincy, Ill., September 29-October 1.

Dr. Young Awarded Medal.—Dr. Hugh H. Young, professor of urology, Johns Hopkins University School of Medicine, Baltimore, was presented with the Keyes gold medal of the American Association of Genito-Urinary Surgeons during its recent annual meeting in Quebec. In bas-relief on one side of the medal is a portrait of Dr. Edward L. Keyes, who died in 1924, and the other side carries the inscription "for contributions to the advancement of urology." Dr. Young graduated from the University of Virginia Medical Department in 1894 and has been associated with Johns Hopkins since 1895. He was president of the American Association of Genito-Urinary Surgeons and the American Urological Association in 1909, of the Medical and Chirurgical Faculty of Maryland in 1911-1912, and of the International Congress of Urology, 1917. Dr. Young has written several volumes on urology and is the founder and editor of the *Journal of Urology*.

Bequests and Donations.—The following bequests and donations have recently been announced:

White Plains Hospital, White Plains, N. Y., $75,000 from an anonymous donor as a memorial to the late Dr. Henry Ernest Schmid.

The following hospitals in New York received bequests from the late R. Bleecker Rathbone, White Plains: St. Luke's Hospital, $65,000; St. Mary's Hospital for Children, New York Orthopedic Dispensary and Hospital, New York Nursery and Child's Hospital, Hospital for Ruptured and Crippled, Home for Incurables and Babies' Hospital, House of Rest at Sprain Ridge, Yonkers $15,000 each.

A trust fund of $200,000 was established in the will of the late Howard B. Magruder to establish and maintain a hospital at Port Clinton, Ohio. Dr. Carl J. Yeisley, Port Clinton, is chairman of a board of trustees appointed to administer the fund.

Montgomery Hospital, Norristown, Pa., $5,000 by the will of Miss Mary Fornance.

Abington Memorial Hospital, Abington, Pa., $20,000 from the annual June fete given by the woman's auxiliary.

The will of Anne T. Fischer provided the following bequests: St. Francis' Hospital and St. Joseph's Hospital for Consumptives, $10,000 each; Misericordia Hospital, $5,000, and St. Rose's Free Home for Incurable Cancer, $2,000. All are in New York.

New York Foundling, St. Vincent's and Mount Sinai hospitals, New York, $1,000 each from the estate of Morgan O'Brien.

Estimate of Life Earnings.—A study of life earnings in sixteen occupations placed medicine at the top of the list with $108,000 for a working span of forty-two years, according to a report in the New York *Times*, July 14. Prof. Harold F. Clark, in charge of educational economics at Teachers College, Columbia University, New York, and a staff of research workers spent eight years in the study, with results shown in the accompanying table. In explanation of the purpose of the study, Dr. Clark said that occupational guidance is being given in disregard or ignorance of wages in the different occupations. He declared that income is the best measure of the relative need in all socially desirable occupations. "Although the professions may seem to be very badly crowded, in the light of the incomes of unskilled labor, farming and even of skilled labor, there is no doubt that by and large the professions need many people in them," he observed. "Professional service is a type of service that people are willing to pay more for because it is scarce."

Life Earnings in Sixteen Occupations

Occupation	Working Life Span	Present Value of Average Earnings for a Working Lifetime
Medicine	42	$108,000
Law	43	105,000
Dentistry	45	95,400
Engineering	43	95,300
Architecture	43	82,500
College teaching	44	69,300
Social work	45	51,000
Journalism	46	41,500
Ministry	44	41,000
Library work	46	35,000
Public school teaching	45	29,700
Skilled trades	44	28,600
Nursing	40	23,300
Unskilled labor	44	15,200
Farming	51	12,500
Farm labor	51	10,400

FOREIGN

World Conference on Leprosy.—The fourth International Conference on Leprosy will be held in Cairo, Egypt, beginning March 21, 1938, under the auspices of the International Leprosy Association, formed in 1931. The three previous conferences were held at Berlin in 1897, Bergen in 1909 and Strassbourg in 1923. The Egyptian government is inviting all countries concerned to send official delegates and in addition, physicians and others interested in the subject are invited to be present. Full information may be obtained from the secretary of the International Leprosy Association, 131 Baker Street, London W. 1.

Sesquicentennial of Purkinje.—A jubilee celebration of the one hundred and fiftieth anniversary of the birth of Jan Purkinje, the physiologist, is being arranged in Prague for September under the patronage of Eduard Benes, president of the Republic of Czechoslovakia. Purkinje was born Dec. 17, 1787, in Libochovice in northwestern Bohemia and studied medicine at Charles University in Prague. After his graduation he was first appointed assistant in anatomy at his alma mater and later became professor of pathology at Breslau, Germany, at the age of 33. At Breslau in 1842 he established what is said to have been the first separate department of physiology in Europe. In 1850 he established a department of physiology at his alma mater in Prague, where he died July 28, 1869.

International Tuberculosis Meeting.—The tenth conference of the International Union Against Tuberculosis, postponed from 1936, will be held in Lisbon, Portugal, September 5-9, under the chairmanship of Prof. Lopo de Carvalho. Topics of discussion will be: Radiological aspects of the pulmonary hilus and their interpretations; primary tuberculous infection in the adolescent and the adult; the open case of tuberculosis in relation to family and domestic associates. The speakers from the United States will include Drs. Charles J. Hatfield, Philadelphia, secretary of the National Tuberculosis Association; Henry C. Sweany, Chicago, and Robert E. Plunkett of the New York State Department of Health, Albany. Information concerning the program and other details may be obtained from the National Tuberculosis Association, 50 West Fiftieth Street, New York.

Deaths in Other Countries

Dr. Felix de Lapersonne, French ophthalmologist; at one time president of the International Association for the Prevention of Blindness; in 1934 received the Leslie Dana Medal, awarded by the National Society for the Prevention of Blindness of the United States in cooperation with the St. Louis Society for the Blind; died July 5; aged 84.

Government Services

Dr. McCoy Studies Leprosy

Dr. George W. McCoy, former director of the National Institute of Health, Washington, D. C., has been assigned by the U. S. Public Health Service to make a study of leprosy in continental United States and the island possessions, according to the New York *Times*. It was stated that the American Mission to Lepers, of which Dr. McCoy has been for many years an honorary vice president, will place at his disposal its facilities for contact with the 200 leper colonies and clinics of Protestant churches throughout the world.

Maryland Free from Bovine Tuberculosis

Maryland became a modified accredited area July 1, the forty-fourth state to eradicate bovine tuberculosis. Three other states were successful in tuberculin-testing work during June. California reported the following counties for modified accreditation: El Dorado, Lake, Sacramento and Yuba. New York reported the necessary progress in Chenango, Delaware, Lewis and Otsego, while South Dakota reported Brown, Hyde, Jerauld, Moody and Spink. Seven municipalities were accredited in Puerto Rico.

Examinations for Army Medical Corps

The War Department announces that an examination will be held September 13-17 for the purpose of qualifying candidates for appointment as first lieutenants in the Medical Corps, U. S. Army, to fill vacancies occurring during the fiscal year 1938. The examination is open to all male graduates of recognized medical schools who have completed one year's internship in an approved hospital and who will not be over 32 years old at the time it is possible to tender a commission. The examination will be conducted by boards in various parts of the United States and will consist of a written examination in professional subjects, a physical examination, and a determination of the candidate's adaptability for military service. Full information and application blanks may be obtained from the Adjutant General, War Department, Washington, D. C. Applications must be received before August 31.

Foreign Letters

LONDON

(From Our Regular Correspondent)

June 26, 1937.

The Treatment of Pleural Effusion

In a discussion at the Royal Society of Medicine, Dr. Burton Wood said that the commonest cause today of pleural effusion in the tuberculous was trauma. Better than treating a pleural effusion was not to provoke one: to remember that a blunt needle will lacerate the pleura, that a drop of alcohol left on a needle may cause intense irritation, that cold air injected into a warm pleural cavity may provoke reaction, or a positive pressure lead to effusion by the stretching of or tearing of adhesions. The man who cannot use his needle as an artist should turn to less delicate work. Any pleural puncture may be the first step toward thoracoplasty.

Many pleural effusions do not require active treatment. They are benign and may be protective in effect if not in intention. Thus a pleural effusion is the commonest manifestation of intrathoracic tuberculosis in childhood and appears to be analogous to other reactions of allergic type seen in child contacts. Such effusions have little effect on health, sometimes disappear very rapidly, and are rarely followed by parenchymatous disease. Some of the adolescent pleurisies are of similar type. Hence a young person with a "simple" pleural effusion, who is possibly in a hypersensitive state, should not be exposed to the risk of further infection; e. g., by sharing a sanatorium cubicle with a patient with "open" pulmonary tuberculosis.

Dr. Wood asked What is the after-history of patients whose lungs are apparently otherwise sound at the time of the effusion? We have been taught that the expectation of subsequent phthisis is from 40 to 50 per cent, but recent Scandinavian figures suggest that 90 per cent make a lasting recovery. In a series of thirty cases occurring in young persons (from 15 to 35 years of age) Dr. Wood found during an average observation period of five years that twenty-seven remained well and that the remaining three who died were all examples of bilateral pleurisy.

Before the advent of radiology the condition of the lung underlying the effusion was often in doubt. If effusion is suspected, x-ray examination should precede exploration. Blind tapping is justifiable only for the relief of urgent symptoms. If the disease runs a favorable course, the fluid will be spontaneously absorbed; but if it is of less benign type, aspiration will only lead to fresh outpouring of fluid, which will thicken as aspirations are repeated. The end result will be empyema. It is true that fluid, if left, will ultimately cause pleural thickening, but this is a conservative process. Fibrosis begins where tuberculosis ends.

The presence of a tuberculous focus in the underlying lung is sometimes assumed, and this has given rise to the practice of air replacement. This treatment is based on speculation, unless the effusion is known to cover diseased lung. But when the large size of an effusion causes mediastinal displacement or distress, air or oxygen replacement is necessary; but it is useless to try to prevent reaccumulation by pneumothorax. If hectic fever persists, an aspiration will sometimes be followed by a fall of temperature. It is justifiable to try this, with or without replacement, but repeated aspirations are undesirable.

Many of the effusions complicating pneumothorax are benign in their effect. An incomplete collapse is sometimes thus converted into a complete one and a cavity held out by adhesions closed. If an effusion rapidly fills the pleural space, it is tempting to replace it by air in the hope of maintaining a controlled collapse; but the result is usually reaccumulation, and recurrent aspirations bring the risk of empyema.

As intrapleural pneumolysis increases the risk of pleural effusion, Dr. Wood questions the increasing practice of dividing adhesions in the early weeks of a pneumothorax before its efficacy can be fairly judged. When a serous effusion is followed by tuberculous empyema, anxiety is inevitable, though it may remain latent for years and not appear to affect the patient's health. Repeated aspirations then involve the grave risk of secondary infection. Conservative treatment is the best in most cases, especially in the young.

In cases of infected tuberculous effusion the need for action is urgent, but in the less virulent cases gelatinothorax should be tried before instituting closed drainage by intercostal catheter and negative suction.

Recognition of Opticians for Sight Testing

Surprise and dissatisfaction have been widely expressed in the medical profession by the proposal of the Ministry of Health to recognize opticians for sight testing in the regulations for the provision of spectacles under the national health insurance act. The *British Medical Journal* terms the proposal "profoundly disturbing" and points out that it is considerable advance in the direction of statutory registration of sight-testing opticians, which has not only been vigorously opposed by the British Medical Association during the past thirty years but has been reported on unfavorably by governmental departmental committees. In a letter to the *Times*, Dr. G. C. Anderson, medical secretary of the association, says that the regulation is contrary to the whole weight of expert opinion. An analysis of 30,000 consecutive cases of ocular disturbances showed that in 27.6 per cent these were due to causes other than errors of refraction, while in 7 per cent there were similar disturbances without any error of refraction. Opticians, ignorant of diseases of the eye, will in most cases prescribe glasses for all sorts of trouble. In a letter to the *Times*, Sir John Parsons, past president of the Royal Ophthalmological Society, states that it is by no means infrequent for the ophthalmic surgeon to see cases of grave loss of vision which has resulted from sight-testing opticians failing to recognize disease conditions. He has had patients suffering from chronic glaucoma thus overlooked and in one case from malignant intra-ocular tumor. Mr. Malcolm Hepburn, honorary secretary of the Council of British Ophthalmologists, points out that there are a great many varieties of the normal which, to the improperly educated observer, may simulate disease conditions of the eye; and it often requires all the medical training of the ophthalmic surgeon to decide whether they are of importance or not. When the sight-testing optician observes them he advises the patient to seek medical opinion, thereby creating fear of danger to the sight, which it is sometimes very difficult for the ophthalmic surgeon to dispel. Had he been consulted in the first instance, this would have been avoided. Secondly, the optician seems to have little idea regarding the relation between errors of refraction and eye diseases, and this leads him to order glasses "to prevent loss of sight." Thus the patient is frightened into wearing glasses that may be entirely unnecessary.

Increase in Court Claims for Dermatitis

The Wholesale Textile Association is exercised by the frequency with which claims are made for dermatitis said to be produced by articles of clothing and has held a conference to discuss what steps should be taken to resist unjustified claims. Originally claims of this kind arose in respect to furs, and dermatitis was generally supposed to be due to the wearing of furs which had been treated with inferior dyes. Recently, however, claims have arisen with regard to every type of clothing, including gloves, dresses and underwear. Apart from people who endeavor, the association alleges, to make a living out of dermatitis claims, there are a certain number of persons among the general public suffering from an idiosyncrasy to dermatitis. In this case the fault may be said to be with the person and not with the garment. It is on these persons that the responsibility rests not to wear apparel that is irritant to them but harmless to the general public.

Claims for dermatitis frequently arise in connection with the use of hair dyes, particularly paraphenylenediamine. A case has just been heard in which heavy damages were awarded at Manchester. A woman sued "Oloxo Limited," London, and a local hairdresser for negligence. She alleged that after the application of a hair dye called "Oloxo" she suffered from dermatitis and her face became so swollen that she could not see for three days and went through an agonizing time. The hairdresser claimed an indemnity from "Oloxo" on the ground that she was assured that "Oloxo" was harmless. The judge said that "Oloxo" was not as warranted. It was not safe for application to the head—the purpose for which it was sold. The makers knew this, for the manager had said that he regarded it as dangerous to use without a skin test. Yet they gave a warranty that it was safe. The judge awarded $2,600 damages.

PARIS

(From Our Regular Correspondent)

June 17, 1937.

The Paris Exposition

In the special exposition number of the *Presse médicale*, June 26, is a description of the exhibits illustrating the progress that has been made in medicine, surgery and microbiology. Prof. G. Roussy, dean of the local medical school, and Dr. Justin-Besançon, also of Paris, were in charge of assembling the exhibits for the section on internal medicine. There are five large booths in which the principal discoveries made in the different branches are presented in a manner that will make it easy for the public to understand, without sacrifice of the essential scientific aspects of the subjects. The various steps in medical discoveries from the beginning of the nineteenth century to the work of Pasteur are well shown. The army medical and public health services have exhibits that do credit to their splendid organization in France. One booth is devoted to clinical thermometry and calorimetry, with demonstrations of how the basal metabolic rate is determined. The various physical methods (roentgenography, roentgen therapy, radium therapy, ultraviolet therapy and pyretotherapy) are well illustrated. In the Claude Bernard section, recent advances in diseases of nutrition and of the alimentary tract receive a good deal of attention. A chart illustrating the location and function of the endocrine glands makes this subject easy to understand.

In hematology, special stress is laid on the treatment of anemias and leukemias. In neurology, numerous sections and diagrams attempt to show the progress in this field. The wax models from the museum of the St. Louis Hospital, which are familiar to every syphilologist and dermatologist who has ever visited Paris, form an important part of the exhibit at the Grand Palais.

The surgical portion was organized by Prof. A. Gosset and Dr. Frédet. The dominant idea was to concentrate on three subjects: anesthesia, asepsis and transfusion. In the first named the exhibit was arranged by Dr. Robert Monod and in the last named by Dr. M. Tzanck. The anesthesia exhibit consists of a series of units showing the various anesthetic agents employed at present. The various types of apparatus for general (inhalation) anesthesia, the method of using carbon dioxide as an adjuvant, intravenous administration of barbiturates for general anesthesia, and spinal, local and rectal technic are all shown in a way to make them easy for visiting physicians to understand. With the aid of Mr. Walter, an experienced hospital architect, the various methods of obtaining aseptic operating conditions are shown in a series of models of sterilizing and operating rooms. In the transfusion exhibit, the technic of blood grouping and of giving transfusions are well shown.

The section of microbiology is dedicated to the work of Pasteur and its results. The description of the exhibit is written

by Pasteur Vallery-Radot, Pasteur's grandson, an eminent clinician here. The various discoveries of Pasteur are arranged in chronological order. In addition, photographs of Pasteur and his co-workers, laboratory notes, letters and reproduction of autographs will be of great interest to visiting bacteriologists. The results of Pasteur's discoveries are shown under the headings of serums and serotherapy, use of toxoids (anatoxins) and associated vaccinations.

THE HYGIENE BUILDING

Medical visitors to the exposition will find that the building which has been constructed under the supervision of Professor Tanon contains many exhibits of great interest. Diagrams and models illustrate every problem relating to hygiene of large agglomerations, such as garbage disposal, control of infections, disinfection, antepartum clinics, vaccination services, and diagnostic laboratories for syphilis, tuberculosis and cancer. There are many films devoted to social hygiene problems. One exhibit shows how an insanitary dwelling can be changed so as to make it habitable. The methods of obtaining a good water supply and the disposal of sewage are well illustrated in another stand. Food inspection is given a prominent place. The development of the individual from birth and the efforts which preventive medicine is making to reduce mortality are shown in an excellent manner. Social medicine is represented by exhibits of the work of antituberculosis and syphilis dispensaries, and that of anticancer centers.

MEDICAL MEETINGS DURING THE EXPOSITION

American physicians who intend to visit the Paris Exposition this summer and fall may find the following schedule of meetings of interest:

July 1-10.	Daily programs for those interested in public health.
3-5.	National Hospital Congress.
4.	Meteorological and Biometeorological meeting.
4-11.	National Dental Congress.
5-11.	International Hospital Congress.
6.	Special meeting of Academy of Medicine devoted to colonial medicine.
7.	Aeronautic medicine.
8-11.	General Council of International Association of Physicians.
8-10.	International neurologic reunion.
11-17.	International Congress of Medicine Applied to Sports and Physician Education.
12-13.	International Congress of Public Health Works.
12-17.	International Sanatorium and Private Hospital Congress.
16-18.	International Psychotherapy and Comparative Psychology Congress.
19-21.	International Congress for Protection of Children.
19-25.	International Mental Hygiene Congress.
24-Aug. 1.	International Infantile Psychiatry Congress.
25-31.	International Psychology Congress.
September 5-9.	Conference of International Union Against Tuberculosis.
13-15.	Congress of International Gastro-Enterologic Society.
29-Oct. 2.	International Congress of Blood Transfusion.
30-Oct. 2.	French Gynecologic and Obstetric Congress.
October 4-9.	French Surgical Congress.
4-9.	French Urologic Congress.
7-9.	Orthopedics daily conferences.
7-9.	International Scientific Press Association Congress.
7-14.	Medical Photographic and Cinematographic Congress.
9.	Conference (International) on Rheumatology.
14-17.	Tourism, Thermalism and Climatism (International) Congress.
17.	French Society for Esophagoscopy and Bronchoscopy.
18-20.	French Otorhinolaryngologic Congress.
18-20.	French Hygiene Congress.
20-21.	International Public Health Officers Congress.
25-28.	International Food Congress.

During the exposition, special graduate courses will be given in the various public hospitals of Paris. Information may be obtained by writing to Mlle. Huré, Salle Béclard, 12 rue de l'Ecole de médecine, Paris.

International Congress on Rheumatism

The French Antirheumatism League will hold a meeting October 9 next in Paris in which a number of papers will be read on the use of radioactive preparations in rheumatism. A clinic will be given by Professor Loeper in the morning at the Hôpital Saint-Antoine, and the afternoon session will be devoted to papers on radioactive medication, emanotherapy, the radioactivity of waters at certain health resorts, and allied subjects. These papers will appear in the October issue of the *Revue du rhumatisme*.

French Otorhinolaryngologic Congress

The forty-second annual session of the French Otorhinolaryngologic Congress will be held in Paris, October 18-20. The subjects chosen for special reports are indications and results of intracranial operations on the auditory nerve, by Aubry and Ombrédanne of Paris, and acute inflammation of the larynx and hypolarynx in children by Le Mee, Bloch and Bouchet. Information can be obtained through M. Raimond, Office médical, 17 rue de Buci, Paris.

BERLIN

(From Our Regular Correspondent)

June 5, 1937.

New Developments in Genetics

The German Society of Genetics held its convention recently at Frankfort-on-the-Main. Johannes Lange, Breslau psychiatrist, spoke on "The Limits of Environmental Influence on Inherited Characters in Man." The special difficulties of this problem can be solved only by research on twins, he believes. In a study of two pairs (one male pair and one female pair) of enzygotic twins, it was observed that one member of each pair showed a physical defect: harelip in one and oxycephaly in the other. There were other marked dissimilarities between the normal and the afflicted twin in each instance. Serologic variations were also frequently observed in twins of discordant development. Differences in thyroid activity were observed in new-born enzygotic twins; the weaker twin often had the larger thyroid. Frequently the "concordance" of enzygotic twins is far from complete. The tendency may be termed concordant, but differences can exist in the degree to which it manifests itself. It would seem that phylogenetically "restless" traits are apt to be unstable; the vertebral column is an example. The occasionally abnormally low weight of twins at birth shortens their expectation of life. Infants who are weak at birth are further endangered by nutritional disturbances, and the sexual development of twins of unequal weight can also assume divergent form. If the twins are underweight, there will be a corresponding retardation of mental development. Whatever developmental process has been completed in utero can be changed later only by violent means and here too the variability of pathologic predispositions appears greater than that of normal predispositions. In any case the evaluation of the postpartum environmental influences is most uncertain. Thus twins affected with diabetes mellitus cannot be changed in this respect. In allergies the circumstances of concordant manifestation vary; thus, certain allergies seem to bar the way to others. Emotional experiences or protracted unemployment may lead to manifestations of serious illness in one of a pair of twins, while the other remains healthy. Discordances to manic depressive insanity have been recorded; the twin possessing the more melancholy temperament is more likely to become insane. The etiology of the frequently wide difference in temperament itself appears to lie in an antenatal sensitivity of the temperamental bases. Lange also believes that schizophrenia may arise from a developmentally unstable predisposition and that epilepsy may originate in developmental defects with a hereditary basis.

In the discussion that followed the reading of Lange's report, Prof. Otmar von Verschuer emphasized that today in contrast to former times the stress is increasingly on the discordances; one should remember, however, that in research on twins a maximal opportunity to observe environmental influence is assured. Prof. Eugen Fischer, anatomist, believed that the discordance in enzygotic twins is no greater than the difference between the right and left sides of an individual human body.

There is, for example, no right and left vertebral column. Since the hereditary predispositions are identical for right and for left, the variations must be conditioned by development alone. Therefore the differences between enzygotic twins cannot be regarded as of decisive importance.

A report by W. Lehmann of Breslau dealt with the hereditary pathology of hyperthyreoses. Besides definite exophthalmic goiter there may be a number of transitional states in which the sum of hereditary predispositions assumes a pathogenic rôle. Environment must also be granted importance. Of ten pairs of twins studied, two pairs of enzygotic twins were found to be concordant and one pair discordant, whereas, of seven pairs of dizygotic twins, six were discordant. Extensive investigations of families disclosed a wide distribution of both severe and mild symptoms of thyroid disease. This was cited as demonstrating that quantitative differences exist between the various forms of exophthalmic goiter. Women are more subject to this disorder than men.

Extensive investigations of "The Question of Heredity in Rheumatic Disorders," by Ferdinand Claussen of Frankfort-on-the-Main led him to conclude that chronic rheumatism is inextricably bound up with heredity. He found that, of twenty-five pairs of enzygotic twins, eighteen showed pathologic concordance, whereas of thirteen dizygotic pairs only five showed such concordance. It was noteworthy that talipes valgus and other forms of clubfoot were almost always constant in rheumatic persons. More than 50 per cent of rheumatic persons belong to the asthenic-hypoplastic group.

The Relation of Vitamin C to Infection

"Vitamin C and Defense against Infection" is the title of a paper in the *Klinische Wochenschrift* by Dr. S. Thaddea, assistant at the university clinic. Although the action of cevitamic acid has been investigated, little has been known of its rôle in the infections. Clinical medicine, however, has shown a growing interest in the destiny of cevitamic acid in the intoxications and infections. Experimental and clinical tests have demonstrated the decisive rôle of the adrenal glands in the defense of the organism against infection. Changes in the adrenals are present in acute infections together with clinical symptoms indicative of cortical dysfunction. Normally the adrenal cortex is of all parts of the body the richest in vitamin C. Favorable results can be obtained in diphtheria toxin intoxication and in infectious diseases by enriching the cevitamic acid content of the adrenal cortex. In experimentation with diphtheria intoxication of guinea-pigs, the percentage of survivals among animals which had received the vitamin treatment was greater than among the control animals. The adrenals and liver of treated animals were observed to be completely normal, whereas these organs in the control animals showed marked changes due to the inflammation and, in addition, an obvious deficiency in vitamin C content. In experimental tuberculosis of guinea-pigs, the loss in weight of the experimental animals is arrested and the life span lengthened. In pneumococcic sepsis of the white mouse, too, the typical picture is less pronounced and the liver suffers less damage if the animal has received preliminary treatment. Thus there is experimental evidence indicating that the administration of vitamin C leads to a remarkably strengthened resistance to various intoxications and infections, while further organic changes take place only in slight degree or are entirely lacking.

From a clinical standpoint these experiments demonstrate that the elimination of vitamin C in the urine at the height of acute infection or in the more severe febrile types of pulmonary tuberculosis may be especially low. Obviously there exist certain connections between the height of the fever and the excretion of cevitamic acid. Experimentation with intravenous injection of cevitamic acid has demonstrated that acute infectious diseases and exudative types of pulmonary tuberculosis are accompanied by an increased demand for vitamin C. In contrast to healthy subjects, persons suffering from infectious disease retain a greater part of the administered cevitamic acid in order to replenish the depleted vitamin C reserve. Conversely, persons affected with sclerotic forms of tuberculosis fail to present any demonstrable deficit in vitamin C. In tuberculous pulmonary hemorrhages too the vitamin C excretion is manifestly lowered, but after the bleeding has stopped the values rise again to normal. In acute infections and in the exudative and cavernous type of tuberculosis, the cerebrospinal fluid undergoes great depreciation of the vitamin C values. Administration of cevitamic acid raises the C level in the spinal fluid. The success of many tuberculosis diets, that of Gerson-Sauerbruch-Herrmannsdorfer, for example, may depend not alone on the exclusion of sodium chloride but in great measure on a rich supply of vitamins, especially vitamin C.

Developments in the Antivenereal Disease Campaign

By the terms of the law of June 1, 1933, the granting of small loans to couples who wed is contingent on the results of an official medical examination. No loan is granted to any applicant who is suffering from a venereal disease which carries with it the danger of contagion. Practically, this mandatory examination was the basis for a refusal of subsidies to 9,065 (2.7 per cent) of 333,776 applicants during the latter half of 1934 and the first half of 1935. The rejection of 547 applications was based on the existence of a contagious venereal disease: syphilis in 422 instances and gonorrhea in 125 instances. In addition, 209 rejections were made on the grounds of sterility and incapacity for child-bearing, conditions which also may be traced in great measure to some venereal infection.

The law of Oct. 18, 1935, stipulates that a marriage cannot be contracted if one of the betrothed is affected with a contagious disease that might endanger the health of the marriage partner or of the offspring. An engaged couple must obtain from the bureau of health a certification to the effect that no such impediment to marriage is present. The German Antivenereal Disease Society under the presidency of Professor Spiethoff has formulated the following guiding principles with respect to potential contagion: Syphilis is generally considered contagious for four years subsequent to infection. Syphilis is considered as no longer transmissible if four years has elapsed since infection and if after an adequate therapy no symptoms have been manifested for two years. The foregoing periods may be shortened on the basis of scientifically established cure. In gonorrhea in the male patient the urine and prostatic secretion must be negative for gonococci (even for threads) during at least one examination weekly over a period of three months. It is mandatory that these follow-ups be based on recognized scientific provocative tests. If the data so warrant, a shorter period of observation will be deemed sufficient. In the case of a woman gonorrhea patient, it is stipulated that after completion of treatment three months should elapse during which no gonococci are demonstrable (in the urethra, cervix, gland of Bartholin or rectum) at follow-ups conducted at least once each week. As in the case of the man, proper provocative tests are compulsory. Examination before, during and immediately after menstruation is particularly conclusive. Here too the period of observation may be shortened on the basis of satisfactory scientific proof of cure. The record, only just made public, of violations of the antivenereal disease law during 1933 is as follows: In all, 346 defendants were convicted, almost exactly the same number as in 1932. Of these 346 persons, 196 were sentenced for indulging in coitus while afflicted with a venereal disease, two for contracting marriage while afflicted with a venereal disease and failure to inform the partner of the illness, 135 for unauthorized treatment of venereal disease and offers to perform such treatment, twelve for attempting to sell appliances alleged to cure or palliate venereal disease and there was one conviction for violation of the clause which prohibits the suckling of infants by venereal disease sufferers.

JAPAN

(From Our Regular Correspondent)

May 31, 1937.

The National Health

In the present session of the imperial diet, Mr. Hasama, chief of the board of health, discussed the health of the nation. The present inclination of the birth rate is slightly downward, but it is high in comparison to that of other countries, being 30 per thousand of population. The higher rates are found in the northern provinces and the lower rates in the larger cities and the middle parts of the country. The death rate was 18.1 per thousand in 1934. More than 130,000 persons died of tuberculosis in 1934, the rate being 19.3 per 10,000 of population, including more than 96,000 persons who died of pulmonary tuberculosis. There were about 49,000 cases of dysentery in 1935, 7 per 10,000 of population, and more than 15,000 deaths. According to the investigation made by the home office, of 152,050 villagers who were examined by the official experts 118,000, about 78 per cent, had infestation with some kind of parasite. There are reported to be more than 7,000,000 cases of trachoma throughout the country. The number of insane increased and was greater than 83,000 in 1935. Venereal diseases also increased. The physical examinations of conscripts revealed that the number of those who fail the medical tests are regularly increasing every year throughout the country. The cause, however, is not clear. The home office has planned to establish this year as many health centers as possible in all parts of the country.

Decrease in Beriberi

It has been almost positively proved that the chief cause of human beriberi is a deficiency of vitamin B_1. Among the poorer classes, however, whose economic condition prevents them from taking sufficient nourishment, there are still many cases of this disease. Dr. Yanagi of the Izumibashi Charity Hospital reports that he found 126 cases of beriberi (14.2 per cent) among 888 patients who came to his department recently to consult him. The percentage of cases of beriberi has shown no change in his hospital in the past ten years. Ten per cent of the patients were suffering from this disease every year. The number of male and female patients has remained almost the same. The greater number are between 15 and 20 years old. Among the women, many are from 25 to 30 years of age, the condition probably being due to pregnancy. Beriberi is on the decrease except among the poorer, and if they could have sufficient vitamin B, it could easily be prevented among them.

Physical Examinations at Schools

The general tendency, seen in the physical examination for conscription, that young men are becoming constitutionally weaker every year, has attracted much attention. At the Tokyo Imperial University it has been announced that the physical examination of the students henceforth will be done differently from that of former days. What it needs is not the recording of physical development but guidance of students to better health. Students were formerly examined with the stethoscope only but now they will also, if necessary, be roentgenographed.

The Association of Hematology

The *Journal of Pathologic Haematology*, which has been issued for the last six years under the supervision of Prof. Dr. Katsunuma of the Nagoya Medical College, has been instrumental in organizing the Japanese Society of Hematology. The society decided to hold its annual meeting as a branch of the Japan Medical Conference, which is to hold its general meeting in the spring. The title of the Journal will hereafter be *Japanese Haematology* and it will be published bimonthly and will contain original reports of researches on the blood. Drs. Kiyono of Kyoto, Mitamura and Sato, of Tokyo; Sugiyama of Kanazawa and Katsunuma of Nagoya are on the board of directors.

Deaths

Dr. S. Endo died April 20 at his home in Tokyo, at the age of 68. He was very modest and known by few even in this country, but "Endo's Medium" is almost universally recognized. While working in the Kitazato Research Institute in Tokyo, he succeeded in 1903 in inventing this culture medium, using Japanese isinglass. By means of Endo's medium it is easy to distinguish the typhoid bacillus from the colon bacillus.

Dr. J. Shimazono, honorary professor at Tokyo Imperial University, died April 27 of pneumonia, aged 60. He was born in 1877 in the city of Wakayama and in 1904 graduated from the medical college of the Tokyo Imperial University. He went to Germany in 1909 to study for three years. On returning, he was appointed professor at the Okayama Medical College, was given the degree of "Igakuhakushi" the next year, and three years afterward went to Kyoto Imperial University. In 1924, when his name had come to be widely known, he was transferred to Tokyo Imperial University as successor to the late Dr. Kinnosuke Miura. In 1929 he went to Germany as an exchange professor, lecturing one year at Berlin University. His investigations on the cause of beriberi are famous. He was the director of the hospital attached to the university, and also of the Izumibashi Charity Hospital.

NETHERLANDS

(From Our Regular Correspondent)

April 27, 1937.

The Fight Against Bovine Tuberculosis

Since 1920 the fight against the spread of tuberculosis among cattle has gone forward relentlessly in Friesland, but it has been effective only where the individual farmer is a constant active participant. According to statistics compiled by the antituberculosis society, the number of reactive animals has greatly diminished since 1923. During 1935 declines were reported of from 15 to 3 per cent in certain regions; elsewhere the drop was from 28 to 7 per cent, from 37 to 6 per cent and from 39 to 11.8 per cent. Not a single case of tuberculosis has been reported for two years among the cattle on the island of Ameland. Two important procedures of the campaign are the isolation of cattle infected with open tuberculosis and the periodic examination of specimens of milk. The country folk have become convinced that open tuberculosis constitutes the greatest danger to stock raising. The separation of reactive from nonreactive cattle is of great difficulty and a favorable result can be attained only after a regular inspection has been instituted. Certain tuberculous animals are submitted to monthly, in some instances quarterly, examinations; the results have been gratifying from both a clinical and a bacteriologic point of view.

Regulation of Dilutions of Diphtheria Toxin

Special conditions to which the dilution of diphtheria toxin must comply have been stipulated by the minister of social service. Diphtheria toxin cannot be administered save in the form of dilution susceptible of being used for intracutaneous injections in the Schick test. The diphtheria toxin content of this dilution or "Schick fluid" cannot, per cubic centimeter of dilution, exceed 0.1 of the quantity of toxin that would prove lethal to a guinea-pig weighing 250 Gm. within a period of four days; 0.2 cc. of this dilution, namely, 0.02 of the minimum lethal dose, is considered to be a "trial dose" for the Schick reaction.

The dilution of diphtheria toxin designed to induce the Schick reaction must in addition comply with the following conditions: 1. Ten cubic centimeters injected, immediately after heating to a temperature of 37 C., intracutaneously into a guinea-pig should kill the animal within a period between three times twenty-four hours and five times twenty-four hours. 2. One twenty-fifth of the trial dose, if it contains 0.2 cc. of a dilution

to 0.04 of the Schick fluid, when inoculated into the skin of a guinea-pig ought not to provoke any characteristic reaction. 3. One tenth of the trial dose, if it is 2 cc. of a dilution to 0.1 of Schick fluid, inoculated into the skin of a guinea-pig ought to provoke a positive Schick reaction. 4. The trial dose mixed with 0.001 of an international unit of diphtheria antitoxin, inoculated into the skin of a guinea-pig, should provoke no reaction.

For the control reaction, the Schick fluid ought to be heated for at least ten minutes at 70 C. in order to destroy specific toxin.

Ampules, bottles and other receptacles in which dilutions of diphtheria toxin for use in the Schick test are stored, transported or imported, together with their wrappers, must bear the plainly visible legend: "Fluid for the Schick test, 0.2 cc. for intracutaneous injections." In addition there must be set forth the date on which the fluid was supplied and the duration of its effectiveness. The latter must not exceed seven days from the date of supply. Moreover, explicit directions for use must appear either on the outside of each package or on an accompanying loose sheet. Further analogous regulatory measures have been promulgated which concern the preparations for active immunization against diphtheria.

BUCHAREST

(From Our Regular Correspondent)

June 25, 1937.

Endemic and Sporadic Goiter

At a recent meeting of the Rumanian Scientific Academy, Dr. Danielopolu read a paper on his observations based on 40,000 cases of endemic and sporadic goiter. Accompanied by eight physicians and three veterinary surgeons, he visited some endemic districts of Rumania, namely, Sibiu, Storojinet (Bukovina), Tarnava Mare, the valley of Moldovita (Bukovina) and Alba. His observations led to the conclusion that economic circumstances predispose to the occurrence of endemic goiter. The condition cannot develop unless the diet is qualitatively and quantitatively insufficient. Endemic goiter develops in many cases under the influence of puberty and pregnancy. Women are more predisposed than men, for physiologic reasons. Danielopolu and his assistants usually found that the right lobe is attacked. They found different types of goiter: unilobar either on the right or on the left side, bilobar, and special forms: cystic, vascular and lobular. Danielopolu also studied the hereditary background during his tour. According to his experience inheritance is not an important factor in the production of goiter.

Scarlet Fever in Children

The chief medical officer of health of the city of Cluj, the capital of Transylvania, publishes a statistical report on 645 children with scarlet fever. Of these, 160 received complete inoculations and twenty-nine only single inoculations, while 456 received none at all. The mortality rate of the noninoculated children was twice as high as that of the inoculated ones: 8.9 and 3.7 per cent respectively. Complications were rather frequent among the noninoculated but strikingly infrequent among the inoculated. Milder forms of scarlet fever are encountered much more often in inoculated children than in those who are not inoculated; conversely, severer cases are more frequent among the noninoculated. The fact that rather severe cases of scarlet fever very infrequently occur in inoculated children less than 6 years old, while the disease is fairly frequent in the noninoculated ones, and beyond 6 years rather frequent even in the inoculated ones, allows the conclusion that antiscarlatina inoculations are more efficacious in early childhood. If it is admitted that inoculations do not influence greatly the morbidity of scarlatina, it is at any rate true that the mortality rate is less among the inoculated and the course of the disease is milder. Drs. Vlad and Gavrial, city medical officers of health in Cluj, suggest that systematic inoculations be made in children from 1 to 3 years of age, when these are most efficacious.

Tetanus Following Abortion

Drs. Mironescu and Bals report the following two cases: 1. A married woman, aged 31, developed tetanus fourteen days subsequent to septic abortion. She was admitted to the hospital on the seventh day after the onset of the first symptom with generalized tetanus, from twenty to twenty-five crises occurring hourly. She received antitetanic serum, antiscarlatinal serum and antigangrenous serum. After the tetanus serum had been administered daily for eight days, the symptoms of tetanus disappeared. 2. In a married woman, aged 29, the first signs of tetanus appeared fifteen days after abortion. She was admitted to the hospital on the tenth day with generalized symptoms. She received 3,400,000 units of antitoxin, whereupon the symptoms disappeared on the tenth day. Both patients made uncomplicated recoveries.

Epinephrine in Treatment of Chronic Malaria

There are still many cases of malaria in the proximity of the swamps, especially in the Dobrudja district. Some prominent health officials suggested the introduction of the Ascoli therapy, which in Italy proved to be efficacious. The essentials of this treatment consist in daily injections of epinephrine, beginning with 0.01 mg. and rising to from 0.05 to 0.1 mg. Either 0.05 or 0.1 mg. is usually repeated twenty times. This way of administration ensures that the organism tolerates this quantity of epinephrine well, so that in the majority of cases the treatment runs smoothly without the least disturbance. In instances of malarial splenomegaly with a spleen index of 4, a small increase in the dose of epinephrine is necessary, of course only if it is well borne. Treatment with epinephrine is an important auxiliary in the treatment of chronic malaria, malarial splenomegaly, malarial anemia and cachexia.

Quinine as a Prophylactic Against Influenza

According to Dr. Winckel of Budapest, quinine was administered as a preventive of influenza fifty years ago, and, while it came into disrepute, attention has again been directed toward it. One of the Berlin children's homes that suffered often from influenza epidemics made a trial of quinine prophylaxis in January 1933 with a daily dose of 0.05 Gm. of quinine sulfate. Among 126 children, nine refused to take the drug, and six of these nine contracted influenza, while of the other 117, eight contracted influenza the first week, and no more cases supervened. At that time influenza raged in Berlin. The six children who refused to take quinine had severe influenza, while the others had only mild attacks.

More convincing are the results at the Graz clinic, where the prophylactic use of quinine has been tested on 173 nurses. Prior to the introduction of prophylaxis, 22 per cent of the nurses contracted influenza. After the administration of quinine (quinine hydrochloride and sodium salicylate, 0.25 Gm. of each), only 5 per cent fell ill.

Congress of the Latin Nations on Otorhinolaryngology

The Otorhinolaryngologic Congress of the Latin nations will be held in Bucharest September 16-19, under the presidency of Dr. Nicolai Meţianu, professor of otolaryngology at the University of Bucharest. The chief theme to be discussed will be Indications for Operation in Cases of Acute or Chronic Otomastoiditis. The general meeting of the Society of Broncho-Esophagoscopy of the Latin nations will be held at the same time. Also the Rumanian Society of Otorhinolaryngology will hold its annual meeting. The organization of the congress has been entrusted to a committee of fourteen members, directed by Dr. Meţianu. Information may be had from Dr. I. Tetu, Bucharest, Strada Dionisie No. 50, Rumania.

Dr. Ulmeanu Awarded Prize

The Parisian Academy of Medicine conferred a great distinction on a Rumanian physician, Florian Ulmeanu. The Boullard prize of 1,800 francs was accorded him for his treatise on Voluntary Movements and Chronaxia. Dr. Ulmeanu is a distinguished scholar of the medical faculty of the Bucharest university and presently will become assistant of the Superior Institute of Physical Education. His prize-winning work was done under the direction of Professors Lapicque and Laugier, both of the Faculté des sciences in Paris.

ITALY

(From Our Regular Correspondent)

June 15, 1937.

Meeting of Dermatologists

The Società di Dermatologia e Sifilografia met recently at Pisa under the chairmanship of Prof. Agostino Crosti. Prof. Cosimo Lombardo reported results of staining leprosy and tubercle bacilli in living organisms, by means of direct injection of methylene blue in the skin. The method is of practical value and gives better results than are obtained by intravenous injections.

Professor Pinetti of Sienna reported results of the clinical and histologic study of a typical case of lupus pernio of Besnier-Tenneson type. The patient suffered from infiltration of the skin of the face and of the right arm as well as of the parenchyma and hilus of the lung. Roentgenograms of the hands showed pseudocystic rarefaction of some of the epiphyses of the phalanges. According to the speaker, the causation of the disease is unknown. His patient has no special taints nor does he suffer from tuberculosis or syphilis.

Prof. Pietro Negri of Perugia reported a case of reticulohistiocystoma with sarcomatous degeneration. The biopsy done at different points of the tumor showed that the latter was diffuse, on the upper part of the back and associated with large spots of erythematous infiltration. During the last three months, metastases developed at the cervical and axillary lymph nodes and around the tumor. The histologic structure of the tumor is that of sarcoma with small round cells. Intensive roentgen treatment controlled the evolution of the tumor only temporarily. Transplantation of neoplastic tissues at the skin of the patient failed to take.

Professor Lisi discussed the filtrability of the syphilitic virus. He reviewed Levaditi's theories on the existence of an invisible granular phase of Spirochaeta pallida. The speaker made experiments on rabbits and attempted to detect latent infection by means of the serial passages through the inguinal lymph nodes and the systematic serologic examinations. Starting from scrotal syphiloma of rabbits, the filtration was done through a Chamberland filter No. 2, 3, 5 and 7 and a Berkefeld N filter. Even after four passages through the inguinal lymph nodes in a group of nine rabbits, a scrotal syphilomatous reaction did not take place. Only in two cases out of a group of eight rabbits did the serologic examination give slight positive results, which, on account of the proportion of nonspecific results (15 per cent) in normal rabbits, seem to be of no value. The speaker stated that the results of his experiments do not support the theory of the existence of a filtrable invisible virus of syphilis.

Römer Test

Professor Malesani of Padua, in a paper recently read before the Società medica of that city, reported results of experiments on the influence of cholesterol and lecithin on Römer's test. The mixtures, intradermally given, were made up with 0.4, 0.5 or 1 cc. of the toxin and the same amount of an ether solution which contained 4, 10, 16 or 20 mg. of either fat. The dose for each injection was 0.1 cc. of the mixture. The intramuscular injections were given in a mixture of a minimal lethal dose of diphtheria toxin, 0.3 Gm. of cholesterol and 0.72 Gm. of lecithin for each 250 Gm. of the body weight of the animal. The speaker concluded that the local toxic action of diphtheria toxin is neutralized by cholesterol in the proportion of 0.01 Gm. of the fat for each thirtieth of the minimal lethal dose of diphtheria toxin or by lecithin in the proportion of one sixth of the fat for each forty-eighth part of the minimal lethal dose of the fat. Cholesterol and lecithin injected intramuscularly in the proportion of 0.3 Gm. and 0.72 Gm. respectively for each 250 Gm. of body weight of the animal neutralize a minimal lethal dose of diphtheria toxin. Control animals that are given an injection of diphtheria toxin die with the signs and symptoms of diphtheria intoxication.

Statistics on Social Work

The Istituto di previdenza sociale, a center of social work, has reported on the work done. The center is concerned with providing insurance for invalidism, old age, tuberculosis, maternity and unemployment and also in financing social work of importance for the public. According to the latest statistics, 462,776 pensions for invalidism and old age are paid every year, the cost of which amounts to 401,495,000 lire (about $20,074,750). The center maintains six hospitals for convalescents, ten bathing places and fifty-two dispensaries for treating patients with trachoma. The tuberculosis center has given attention to 287,000 persons from January 1929 to December 1936. There are now about 3,000,000 insured workers, including farmers. The center maintains forty-one institutions for the treatment of the disease. About twenty-two new centers for the care and treatment of insured tuberculous patients are in construction. The center for maternity insurance has seventeen clinics in function. Aside from medical care, the insured women are given certain amounts of money for other expenses in labor or abortion.

International Congress for Protecting Children

The second International Congress for Protecting Children will be at Rome, October 4-8. The first one was held at Paris in 1933. The welfare of children will be discussed in separate sections from social, forensic, hygienic and sanitary points of view. The topic for discussion at the hygienic and sanitary sections will be prevention of infant mortality due to nutritional diseases, establishment of climatic colonies for children of preschool age, care of the health of European children living in colonies, physical education of children attending grammar schools, and prevention of inferiority of health of illegitimate children. The general secretary to the congress is Prof. G. B. Allaria, of the pediatric clinic of Turin. Shortly before the congress takes place, the fourth International Congress of Pediatrics will be held in Rome.

Marriages

THORBORN S. MCGOWAN, Assistant Surg., U. S. Public Health Service, New London, Conn., to Miss Isabel Morrison West Jackson of Pittsfield, Mass., April 17.

SAMUEL E. WAY, Rocky Mount, N. C., to Miss Lillian Pauline Dixon of Winston-Salem, in Nashville, April 14.

ROBERT MABRY DACUS JR., to Miss Bina La Verne Valentine, both of Greenville, S. C., in Pinckneyville, Ill., April 19.

WILLIAM P. HIXON, Birmingham, Ala., to Miss Roberta Mims Knowles in Atlanta, Ga., in April.

WILLIAM GARDNER MORGAN, Benson, N. C., to Miss Mary Virginia Neal of Bessemer, Ala., recently.

JACOB H. BROTMAN, Savanna, Ill., to Miss Sarah Paley of Clinton, Iowa, in Morrison, April 16.

WILLIAM BLOUNT NORMENT to Miss Katherine Williams, both of Greensboro, N. C., April 27.

BENAGER COLUMBUS TEASLEY JR., Atlanta, Ga., to Miss Mary Brooks of Robinson, Ill., April 13.

FRANK P. PIGNATARO, Marlboro, N. J., to Miss Mary E. De Maria of Red Bank, April 22.

Deaths

Frank Kirkwood Hallock ✠ Cromwell, Conn.; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1885; member of the American Neurological Association and the Association for Research in Nervous and Mental Disease; past president of the Connecticut State Medical Society, and the Boston Society for Psychiatry and Neurology; formerly bank president and president of the Cromwell Library Association; member of the board of trustees of Wesleyan University, Middletown; an original incorporator and consultant in neurology to the Middlesex Hospital, Middletown; medical director of the Cromwell Hall; aged 76; died, April 29, of arteriosclerotic heart disease and cerebral thrombosis.

John Blair Spencer, Gloucester, Va.; University College of Medicine, Richmond, 1904; member of the Medical Society of Virginia and the American Academy of Pediatrics; at one time on the staffs of the Providence and Garfield hospitals, Washington, D. C.; surgeon in the U. S. Navy from 1916 to 1919; assistant director of public welfare for the city of Philadelphia, 1919-1920; director of all tuberculosis activities in the city of Philadelphia in 1921; associate director of public welfare for Philadelphia in 1922; director of public health for Philadelphia, 1923-1924; aged 54; died, April 30, of cardiovascular renal disease.

Elmer Leslie Eggleston ✠ Battle Creek, Mich.; American Medical Missionary College, Chicago, 1900; member of the American Gastro-Enterological Association; past president of the Calhoun County Medical Society; fellow of the American College of Physicians; formerly professor of chemistry and secretary at his alma mater; at one time instructor of pharmacology and therapeutics at the Detroit College of Medicine; on the staff of the Battle Creek Sanitarium; member of the editorial council of the *American Journal of Digestive Diseases and Nutrition;* aged 62; died, July 7, of coronary thrombosis.

Edgar Bronson Smith ✠ Providence, R. I.; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1880; fellow of the American College of Surgeons; member of the New England Surgical Society; consulting surgeon to the Rhode Island, Providence Lying-in and Butler hospitals, Providence, Rhode Island State Sanatorium, Wallum Lake, Memorial Hospital, Pawtucket, and the South County Hospital, Wakefield; aged 83; died, April 9, in Orlando, Fla., of coronary thrombosis.

Alphonso James McLaughlin, Sioux City, Iowa; Kentucky School of Medicine, Louisville, 1898; member of the Iowa State Medical Society, and the American Urological Association; served in the U. S. Public Health Service during the World War; fellow of the American College of Surgeons; member of the staff and head of the genito-urinary section of St. Joseph's Mercy Hospital; aged 60; died, April 18, of cerebral arteriosclerosis.

Everett Mingus, Marshfield, Ore.; University of Pennsylvania Department of Medicine, Philadelphia, 1892; past president of the Coos-Curry Counties Medical Society; fellow of the American College of Surgeons; city health officer and coroner for many years; served during the World War; on the staff of the Keizer Brothers Hospital and Mercy Hospital, North Bend; aged 69; died, April 22, of coronary thrombosis.

Carl William Shaffer ✠ Major, U. S. Army, retired, Alexandria, Va.; University of Virginia Department of Medicine, Charlottesville, 1915; also a pharmacist; fellow of the American College of Surgeons; served during the World War; entered the medical corps of the regular army in 1920 and retired in 1933 for disability in line of duty; aged 50; was found dead, April 13, of a self-inflicted bullet wound.

Charles Wesley Rook ✠ Montrose, Calif.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1883; secretary of the Adams County (Ill.) Medical Society, 1887-1893, vice president 1893-1894 and president, 1894-1895; formerly professor of obstetrics at the Quincy (Ill.) College of Medicine; aged 78; died, April 15, of hypostatic bronchopneumonia, arteriosclerosis and hypertension.

Winfield Ayres, New York; Bellevue Hospital Medical College, New York, 1893; formerly adjunct professor of genito-urinary surgery at the New York Post-Graduate Medical School, and chief of the clinic for genito-urinary diseases and demonstrator of anatomy at his alma mater; aged 72; died, April 12, in the New Milford (Conn.) Hospital, of carcinoma of the colon.

Isaac Surnamer ✠ Paterson, N. J.; New York University Medical College, New York, 1896; fellow of the American College of Physicians; consulting neurologist to the Paterson General Hospital, Hackensack (N. J.) Hospital, Paterson City Hospital and the Valley View Sanatorium; aged 64; died, April 23, of cerebral hemorrhage and arteriosclerosis.

Joseph Malcolm Short ✠ Portland, Ore.; Detroit College of Medicine, 1896; assistant clinical professor of medicine at the University of Oregon Medical School; fellow of the American College of Surgeons; aged 65; on the staffs of the Multnomah County Hospital and the Good Samaritan Hospital, where he died, April 30, of cerebral embolus.

Gershom Franklin White, Washington, D. C.; George Washington University School of Medicine, Washington, 1909; served during the World War; aged 63; senior pathologist of the bureau of entomology and plant quarantine, U. S. Department of Agriculture, stationed at Moorestown, N. J., where he died suddenly, April 27, of heart disease.

James A. Sherbondy ✠ Youngstown, Ohio; Western Reserve University Medical Department, Cleveland, 1902; fellow of the American College of Surgeons; served during the World War; consulting surgeon to the Youngstown Hospital; aged 59; died, April 24, of hypertensive cerebral hemorrhage.

Walter Reynolds, Atlantic City, N. J.; University of Pennsylvania Department of Medicine, Philadelphia, 1894; at one time city health officer; past president of the Atlantic County Medical Society; formerly vice president of the city board of education; aged 71; died, April 18, of coronary occlusion.

Paul H. Rupp, Wauwatosa, Wis.; Milwaukee Medical College, 1905; member of the American Psychiatric Association; medical superintendent of the Milwaukee Asylum for Chronic Insane; aged 55; died, April 6, in the Milwaukee County General Hospital, of septicemia and perirectal abscess.

James Arthur Wigley, Mulberry, Ark.; University of Arkansas School of Medicine, Little Rock, 1912; member of the Arkansas Medical Society; past president of the Crawford County Medical Society and the Tenth Councilor District Medical Society; aged 64; died, April 4, of angina pectoris.

Samuel Pierson ✠ Stamford, Conn.; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1881; fellow of the American College of Surgeons; chief of staff and surgeon to the Stamford Hospital; aged 79; died, April 22, of arteriosclerosis and auricular fibrillation.

Walter Rupert Weiser, Daytona Beach, Fla.; University of Pennsylvania Department of Medicine, Philadelphia, 1892; served during the World War; formerly on the staff of the Mercy Hospital, Springfield, Mass., and the Springfield (Mass.) Hospital; aged 67; died, April 13, of heart disease.

Claude V. Young, Lebanon, Tenn.; Vanderbilt University School of Medicine, Nashville, 1893; member of the Tennessee State Medical Association; past president of the Wilson County Medical Society; health officer of Lebanon; aged 69; died, April 28, in a hospital at Nashville, of uremia.

Joseph Emmit Galvin, Fort Dodge, Iowa; St. Louis University School of Medicine, 1918; member of the Iowa State Medical Society; aged 46; formerly city physician; on the staff of St. Joseph Mercy Hospital, where he died, April 18, of coronary occlusion and mesenteric thrombosis.

William Downing Stickley ✠ Fairfield, Ala.; Tulane University of Louisiana School of Medicine, New Orleans, 1923; aged 38; on the staff of the Employees Hospital of the Tennessee Coal, Iron and Railroad Company, where he died, April 12, of spinal meningitis.

Howard Milton Smith, Kansas City, Mo.; Long Island College Hospital, Brooklyn, 1905; physician in the children's hygiene division of the city health department; formerly superintendent of the Kansas City General Hospital No. 2; aged 57; died, April 13, of pneumonia.

George Ernest Peterson ✠ Waukesha, Wis.; Milwaukee Medical College, 1901; member of the Radiological Society of North America; formerly public health commissioner; aged 67; on the staff of the Municipal Hospital, where he died, April 21, of coronary sclerosis.

Frank Edmund Shipman, Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1912; served during the World War; aged 49; died, April 8, in the Veterans Administration Facility, North Chicago, of cellulitis.

George Livesey Van Deursen, Lowell, Mass.; Hahnemann Medical College and Hospital of Philadelphia, 1896; also a dentist; member of the Massachusetts Medical Society; aged 70; formerly on the staff of the Lowell General Hospital, where he died, April 15.

Benjamin Franklin Sturgis Jr., Salem, Mass.; Medical School of Maine, Portland, 1898; on the staff of the Salem Hospital; member of the exemption board during the World War; aged 62; died, April 29, of cerebral arteriosclerosis and encephalomalacia.

Frank W. Emery, Wichita, Kan.; University Medical College of Kansas City, Mo., 1895; member of the Kansas Medical Society; member of the medical board of examiners for recruits during the World War; aged 73; died, April 9, of myocarditis.

William Lee McClain, Scottsburg, Ind.; University of Nashville (Tenn.) Medical Department, 1898; county health officer and formerly secretary of the county board of health; aged 68; died, April 10, of chronic myocarditis and arteriosclerosis.

Frank Adam Hohenschuh ✠ Clinton, Iowa; State University of Iowa College of Medicine, Iowa City, 1900; city health officer; aged 62; on the staff of St. Joseph Mercy Hospital, where he died, April 28, of coronary occlusion and fracture of the hip.

Charles C. Shotts ✠ Poteet, Texas; Memphis (Tenn.) Hospital Medical College, 1902; secretary and past president of the Atacosa County Medical Society; owner of the Shotts Hospital and Clinic; aged 58; died, April 26, of angina pectoris.

Henry Thomas Sparks, Olive Hill, Ky.; University of Louisville Medical Department, 1909; member of the Kentucky State Medical Association; aged 52; died, April 4, in the Stovall Memorial Hospital, Grayson, of cerebral hemorrhage.

Harry Walter Woodruff, Joliet, Ill.; Harvard University Medical School, Boston, 1933; resident in ophthalmology at the St. Louis (Mo.) City Hospital; aged 29; disappeared, Dec. 29, 1936, and was found dead, April 27, near St. James, Mo.

John Wesley Muir, East Las Vegas, N. M.; Drake University College of Medicine, Des Moines, 1903; member of the New Mexico Medical Society; served during the World War; aged 61; died, April 30, of cerebral hemorrhage.

Lewis Ellwood Davis, Pittsburgh; Jefferson Medical College of Philadelphia, 1881; member of the Medical Society of the State of Pennsylvania; aged 82; died, April 26, of cerebral hemorrhage and cardiovascular degeneration.

Richard Wickham Sharpe, New York; Medical College of Virginia, Richmond, 1936; served during the World War; aged 43; intern at the Bellevue Hospital, where he died, April 7, of scarlet fever contracted from a patient.

Ernest Irving Woodbury, Burlington, Iowa; Chicago Homeopathic Medical College, 1894; member of the Iowa State Medical Society; served during the World War; aged 66; died suddenly, April 9, of coronary thrombosis.

Alexander Ridgway, South Haven, Minn.; Minneapolis College of Physicians and Surgeons, 1894; member of the Minnesota State Medical Association; aged 81; died, April 3, of mitral insufficiency and arteriosclerosis.

James Gregg McAlvin ✠ Waterloo, Iowa; State University of Iowa College of Medicine, Iowa City, 1897; aged 67; died, April 14, in St. Francis Hospital, of an infection of the arm complicated by diabetes mellitus.

Ernest Colpitt Steeves, Essex, Mass.; Dartmouth Medical School, Hanover, N. H., 1905; member of the Massachusetts Medical Society; a member of the board of health and school committee; aged 69; died, April 10.

John Lewis Elwood, Maupin, Ore.; Ensworth Medical College, St. Joseph, Mo., 1892; member of the Oregon State Medical Society; aged 66; died, April 6, at The Dalles, of cardiovascular renal disease.

Victor Sheldon-Smith, Menlo Park, Calif.; Kansas Medical College, Medical Department of Washburn College, Topeka, 1911; aged 56; died, April 17, in the University of California Hospital, San Francisco.

John David Leonard ✠ Wagoner, Okla.; Chattanooga (Tenn.) Medical College, 1909; served during the World War; formerly health officer of Muskogee County; aged 53; died, April 24, of hypertension.

Joseph Newton McCoy, Spokane, Wash.; College of Physicians and Surgeons, Keokuk, Iowa, 1882; member of the Washington State Medical Association; aged 78; died, April 19, of cerebral hemorrhage.

George E. Youmans, Adrian, Ga.; University of Georgia Medical Department, Augusta, 1900; for many years postmaster; aged 60; died, April 9, in the Veterans Administration Facility, Augusta.

Alvin G. Tillotson, Michigan City, Ind.; Bennett College of Eclectic Medicine and Surgery, Chicago, 1870; formerly county coroner; aged 90; died, April 29, in the Clinic Hospital, of pneumonia.

Jacob J. Weaver Jr., Uniontown, Md.; University of Maryland School of Medicine, Baltimore, 1870; bank president; aged 88; died, April 10, in the Homeopathic Hospital, Washington, D. C.

Viola Elzada Shaw Terwilliger, Bradford, Ill.; Northwestern University Woman's Medical School, Chicago, 1898; aged 65; died, April 21, in the Methodist Hospital, Peoria, of pneumonia.

Richard Jessup Scofield, New York; University of the City of New York Medical Department, 1890; member of the Medical Society of the State of New York; aged 82; died, April 11.

Albert B. Walker ✠ Wyandotte, Mich.; Detroit College of Medicine, 1899; aged 64; on the staff of the Wyandotte General Hospital, where he died, April 11, of carcinoma of the intestine.

Charles Sumner Wiseman, Union Mills, Ind.; Fort Wayne College of Medicine, 1905; formerly county health officer; served during the World War; aged 58; died, April 25, of uremia.

Charles W. Horton, Hiwasse, Ark.; Barnes Medical College, St. Louis, 1900; member of the Arkansas Medical Society; aged 65; died, April 28, of acute dilatation of the heart.

Frank Ware Smith, St. Thomas, Ont., Canada; M. B., University of Toronto Faculty of Medicine, 1894, and, M. D., Trinity Medical College, Toronto, 1894; aged 66; died, April 24.

Burdett Sheridan Adams, New Haven, Conn.; Hahnemann Medical College and Hospital of Philadelphia, 1898; aged 64; died, April 2, of cerebral hemorrhage and arteriosclerosis.

James Arthur Clement, Dillsburg, Pa.; Southern Homeopathic Medical College, Baltimore, 1894; aged 65; died, April 30, of cerebral hemorrhage, and arteriosclerosis.

Robert F. Strayer, Pittsburgh; Hahnemann Medical College of Philadelphia, 1881; aged 76; died, April 28, in the Homeopathic Hospital, of coronary thrombosis.

Archibald Rowan McCracken, Seattle; Detroit College of Medicine, 1901; aged 67; died, April 24, as the result of injuries suffered in a fall several months ago.

Edmund Peaslee Douglass ✠ Gales Ferry, Conn.; University of the City of New York Medical Department, 1889; aged 71; died, April 9, of lethargic encephalitis.

Frank Deming Solley ✠ Bethel, Conn.; Columbia University College of Physicians and Surgeons, New York, 1905; aged 69; died, April 24, of pneumonia.

David Stevens, Okmulgee, Okla.; College of Physicians and Surgeons, Keokuk, Iowa, 1880; aged 83; died, April 12, of arterial hypertension and uremia.

Robert R. Walker, Oklahoma City; Tulane University of Louisiana Medical Department, New Orleans, 1885; aged 72; died, April 24, of angina pectoris.

Walter C. Welch, Caddo Mills, Texas; Texas Medical College and Hospital, Galveston, 1881; justice of the peace; aged 78; died, April 11.

Robert Arthur Thomas, Magdalena, N. M.; Louisville (Ky.) Medical College, 1904; aged 58; was killed, April 24, in an automobile accident.

Lars Thomas Wendelboe, Newark, N. J.; Baltimore Medical College, 1895; aged 70; died, April 23, of carcinoma of the sigmoid.

Adolph Carl Adam Gaul ✠ Olympia, Wash.; Rush Medical College, Chicago, 1900; aged 77; died, April 26, of pneumonia.

Hiram H. Wirt, Santa Monica, Calif.; University of Wooster Medical Department, Cleveland, 1872; aged 87; died, April 3.

William Ridgely Stone ✠ New York; Johns Hopkins University School of Medicine, Baltimore, 1899; aged 63; died, April 5.

James Benson Whitely, Goderich, Ont., Canada; Victoria University Medical Department, Coburg, 1882; died, April 12.

John Wesley Ward, Titusville, Fla.; College of Physicians and Surgeons, Keokuk, Iowa, 1880; aged 83; died, April 9.

S. W. Stiles, Atlanta, Ga.; Atlanta Medical College, 1885; aged 78; died, April 12, of cardiovascular renal disease.

Frank Joseph Woitishek, Los Angeles; Chicago Medical College, 1890; aged 72; died, April 19.

Correspondence

"THE CLINICIAN AND THE SEROLOGIC TEST FOR SYPHILIS"

To the Editor:—In the editorial "The Clinician and the Serologic Test for Syphilis" (THE JOURNAL, July 10, p. 134) appears the following sentence: "If the tests are negative there is a 95 per cent chance that the patient does not have syphilis (in the absence of previous treatment), but a negative result does not exclude the diagnosis." This statement as given in the editorial may be somewhat misleading. The incidence of syphilis in the general population ranges from 1 to 20 per cent depending on the race, and social and economic conditions. In the average white population taken at random, the incidence of syphilis is about 5 per cent. Hence the chance that any white individual, taken at random, does not have syphilis is 95 per cent.

As is pointed out in the editorial, "in untreated syphilis the range of positivity of the five tests named is from 90 to 95 per cent in all stages of the infection." Hence only about 5 per cent of syphilitic individuals in the general population (excluding treated cases) will give negative results, so that 5 per cent of 5 per cent, or only 0.25 per cent of the people in the general population giving negative reactions, will have syphilis. Hence if the tests are negative there is a 99.75 per cent chance that the patient does not have syphilis, not a 95 per cent chance, as is stated in the editorial.

Of course, these calculations are based on hypothetical percentages which have been assumed for purposes of illustration.

A. S. WIENER, M.D., Brooklyn.

REMOVING ADHESIVE TAPE

To the Editor:—Your recent editorial on methods of removing adhesive plaster from the skin, and rumors of a damage suit for injuries attributed to violent removal, lead us to suggest oil of wintergreen as a simple, painless and highly efficient means. The oil should be applied with a very small cotton swab only to the point of separation of the adhesive from the skin. If it is applied to the external surface of the plaster the fabric will come away, leaving the adhesive material adhering to the epidermis.

CHEVALIER JACKSON, M.D.
CHEVALIER LAWRENCE JACKSON, M.D.,
Philadelphia.

TOXIC DRUGS

To the Editor.—With regard to the article in THE JOURNAL on "Dinitrophenol and Desiccated Thyroid in the Treatment of Obesity," by Dr. Samuel Simkins (June 19, p. 2110, June 26, p. 2193), I wish to express my appreciation of the high quality of the arbeit. In the concluding paragraph in the summary the recommendation is made that "the indiscriminate clinical use of dinitrophenol should be discontinued until the vexing problem of cataracts complicating dinitrophenol therapy is solved." I would suggest that at the present time the profession follow it, omitting the adjective "indiscriminate." The great trouble is that we are not able to discriminate. Is it not enough to know that the drug is extremely toxic and that we should not employ it in the treatment of obesity?

Recently an article appeared in a Mayo Clinic publication stating that the authors used cinchophen in the treatment of gout. Of course, they use careful liver function tests before prescribing the drug, but the point that I wish to make is that the average physician may take a chance without making the test for liver function. The question of the toxicity of the drug appears to be clearly answered in the article by Palmer and Woodall in the Sept. 5, 1936, issue of THE JOURNAL. Certainly enough incriminating evidence has accumulated in the literature to exclude this drug from the pharmacopeia.

Phenolphthalein is a drug that is largely used as a habitual laxative. Its popularity is due to the fact that it acts and is usually prepared in convenient palatable form. In certain individuals the drug is extremely toxic, producing skin eruptions and other evidences of toxemia. I make it a rule in my practice to examine the feces carefully in every case that comes to the clinic. The patients who have taken this drug for any length of time present evidence of chronic catarrhal enterocolitis. The drug belongs to the class of cathartics that produce local irritation. Many of the manufacturers of agar and oil mixtures slip in a dose of phenolphthalein to make the preparation more active, thereby deluding the doctor, who believes that he is prescribing a nonirritant mixture.

HORACE W. SOPER, M.D., St. Louis.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

TEST FOR ALCOHOL IN BLOOD AND BODY FLUIDS

To the Editor:—In a recent issue of THE JOURNAL appeared an inquiry regarding the test for alcohol in the blood or other body fluids. This was answered, but not with sufficient detail. You mention potassium dichromate change of color test. Can you supply information as to the strength of the solution and the conduct of the test?

J. B. DONALDSON, M.D., Lorain, Ohio.

ANSWER.—A great variety of tests for alcohol in the blood and other fluids are described in the literature, and the majority of them depend on the color change produced in potassium dichromate solution when reduced with alcohol. Abels (*Proc. Soc. Exper. Biol. & Med.* **34**:346 [April] 1936) has described a simple modification of the Widmark test that is sufficiently accurate for clinical purposes. The technic is as follows:

One cubic centimeter of 0.33 per cent potassium dichromate solution in sulfuric acid (made by dissolving 333 mg. of potassium dichromate in 1 cc. of water and diluting to 100 cc. with concentrated sulfuric acid) is spread on the bottom of a 50 cc. Erlenmeyer flask. Five-tenths cubic centimeter of blood or other fluid supposed to contain alcohol is pipetted onto a specially prepared bit of filter paper and suspended over the potassium dichromate-sulfuric acid mixture. The flask is heated at 100 C. for from fifteen to thirty minutes. After cooling, the contents of the flask are made up to 3 cc. with distilled water. This will require about 1.7 cc. of water (1 cc. of the potassium dichromate sulfuric acid solution + about 0.3 cc. extracted from the unknown solution + about 1.7 cc. of distilled water). This mixture is placed in a test tube (6 inches by one-half inch) and is compared with the standards.

Fig. 1.—Piece of filter paper cut out.

Fig. 2.—Portion B rolled and secured by tying.

The standards are prepared as follows: In each of fifteen test tubes (6 inches by one-half inch) is placed 1 cc. of the potassium dichromate-sulfuric acid solution. In the first of these tubes is added 2 cc. of distilled water. In the second is added sufficient alcohol to represent a concentration of 0.05 per cent. In the third, enough alcohol to represent a concentration of 0.10 per cent. In the fourth, a concentration of 0.15 per cent and so on, until the last tube represents a concentration of 0.70 per cent. All the standards are brought up to a total of 3 cc. each by the addition of distilled water. The standard tubes are now heated to 100 C. for ten minutes. Now by comparing the color of the unknown solution with the standards, the concen-

tration of alcohol in the unknown may be determined. The standards, if well sealed and protected from light, will remain accurate for two weeks. The first standard tube will represent a concentration of 0 per cent alcohol and the last a concentration of 0.7 per cent, with 0.05 per cent gradations lying between.

An ordinary piece of filter paper is cut out as shown in figure 1. Portion B is rolled up as shown in figure 2 and secured by tying. The fluid to be examined is pipetted onto portion B. The paper is inserted into the flask so that portion B is suspended over the potassium dichromate-sulfuric acid solution and held in position by securing portion A between the side of the flask and the stopper.

DIAGNOSIS AND TREATMENT OF CONVULSIONS IN INFANCY

To the Editor:—A boy, aged 15 months, with threatened convulsions, of which he has had twelve attacks within the past six months, is unconscious. The eyes are closed. There are occasional twitches of the arms and legs. The most alarming symptoms are the slow and irregular respiration with evident expiratory effort. Mucus collects at the lips and larynx. There is no cyanosis. First cousins are said to have had convulsions and to have outgrown them. For infantile convulsions Holt recommends cold to the head and counterirritation to the skin and in addition chloroform, chloral by rectum, and morphine and magnesium sulfate subcutaneously. In such a case as described would the chloroform and other drugs be indicated?

H. A. HASKELL, M.D., Windsor, Calif.

ANSWER.—From the description furnished in the query, it is evident that the slow and irregular respiration, with expiratory effort, indicates increased cerebral pressure associated with convulsive seizures. It is obvious that a careful neurologic examination is indicated. Various clinical tests should be made to exclude a possible tetany. The eyegrounds should be examined in order to detect a possible choked disk or optic atrophy. The reflexes and nerve signs should be examined so far as possible in a child of this age. In view of the diminished respiratory rate, a lumbar puncture would seem to be indicated during the attack, not only for the purpose of relieving intracranial pressure but also for the information that might be obtained by a chemical and microscopic examination of the cerebrospinal fluid.

As far as the use of chloroform is concerned, the hazard is so great and the effect of such short duration that one would hesitate to administer it. In an infant who presents alarming symptoms on account of slow and irregular respirations, one would consider that the use of morphine might further depress respiratory movements and, on theoretical grounds at least, the morphine would seem to be contraindicated.

Magnesium sulfate subcutaneously is particularly indicated in the convulsive seizures associated with tetany. On the other hand, it is also supposed to act by dehydrating the brain and diminishing cerebral edema. While chloral hydrate acts slowly, it is relatively safe if given by mouth or rectum in proper dosage. Would it not be better to try to prevent the occurrence of the attacks by giving small doses of phenobarbital or bromide in the interval between the seizures for a prolonged period?

ISOLATION HOSPITAL FOR CONTAGIOUS DISEASE

To the Editor:—As chairman of a committee of the Uniontown Hospital Staff to investigate the advisability of establishing an isolation unit for contagious diseases, I am writing you for some information. I should like to know if this type of unit in a town of 20,000 with one hospital with a bed capacity of 225 is usually part of that type of hospital. Is this type of unit, where it does exist, supported by the hospital as a unit of the hospital, or by the city or county? What is the number of beds advised for this size hospital and city? Do you have any plans for this type of unit that we could inspect? I would appreciate your giving me this information and any other information that you feel would be of value to us along the line of this survey. Any plans, reprints or outlines that you might have will be carefully handled and returned, if sent to us.

JOHN D. STURGEON JR., Uniontown, Pa.

ANSWER.—The question of establishing an isolation unit for contagious diseases in a relatively small city is always a difficult one to settle. There are times when availability of beds for contagious diseases seems absolutely essential, and yet there are other times when a hospital, which would be inadequate during an epidemic would be a white elephant because it would be empty and would be piling up overhead costs to no good purpose. Flexibility is the quality in contagious disease bed capacity which is most to be desired. This is difficult in a separate hospital unit which requires all the administrative facilities including laundry, kitchens, cleaning, supervision, and other items of overhead. It is most easily achieved in connection with a general hospital where the supervisory and service department can be extended to cover the contagious disease unit. It has been demonstrated that it is quite possible to conduct a contagious disease unit as a part of a general hospital, provided the necessary isolation of personnel and equipment is carried out completely. Such affiliation with the general hospital affords many advantages, including not only the extension of supervisory and service departments of the hospital, through the service of the contagious disease unit, but also the consultation facilities of the hospital staff and the ability to run the contagious disease unit in such a way that physicians sending patients to the contagious disease hospital will not be compelled to turn them over to the care of staff physicians but will be able to care for their own patients themselves, to the greater satisfaction of the family, the patient and the physician. The number of beds advised for the city in question would be difficult to estimate. As stated, there might be times when 100 beds would be needed and other times when none would be needed. A hospital of fifty beds has proved ample for a city of 70,000 population. This, however, was a city hospital and no patients from outside were taken except under unusual circumstances. In estimating the needs, one would probably want to consider not only the population of the town but the population also of the surrounding country from which the general hospital draws its clientele. If arrangements could be made so that there would ordinarily be available from ten to fifteen beds, this would serve most needs except during epidemics. One would, of course, have to draw the line against hospitalizing certain cases, such as measles, whooping cough, chickenpox and minor contagious diseases unless complicated by conditions which in themselves demand hospitalization. One would also have to make separate provision for smallpox, since this disease is difficult, if not impossible, to house in connection with a general hospital. As for plans, the only thing we can suggest is that a hospital must be planned to meet the needs of the community after a careful study of those needs. We would not advise the adoption of any ready made plans, any more than we would advise the adoption of a plan out of a magazine for a house for one's own personal residence. Satisfaction in building a hospital can be expected only under the immediate supervision of a competent hospital architect, who will give careful personal attention to the needs of the situation and will then make his plans to meet those needs.

TREATMENT OF CLIMACTERIC

To the Editor:—My wife, aged 48, is having a hard time going through the menopause. She is depressed, cries easily, is irritable, has days when she feels fine and others when she is suspicious, is quarrelsome, and feels that the whole world is antagonistic. I have been giving her injections of theelin in oil, 2,000 units about once weekly. She has to take sedatives almost every night to sleep. I am wondering whether you have any suggestions or if there is anything new which I might use to help this trying period and make it easier for her. Would x-ray treatment of the ovaries be of any benefit or would it be harmful? I would appreciate any information you may have on the mental disturbances of the menopause. Please omit name.

M.D., Oklahoma.

ANSWER.—The age of the patient and her symptoms are typical of the menopause. There are about eighteen or twenty symptoms that are complained of at this period in life. They are classified as nervous, circulatory and general. The subjective nervousness, depression and hot flushes are the ones that cause the most discomfort. It is well to remember that cessation of menstruation is not the end of this condition but that it is only a visible evidence that disturbance of function of the endocrine glands is present, which involves especially the ovaries, the anterior pituitary, the thyroid and the adrenals, which disturbance in turn involves the delicate equilibrium that normally exists between the two divisions of the autonomic nervous system. The object of treatment is to assist in maintaining a more normal endocrine balance until such time as a normal glandular adjustment will occur.

The duration of the climacteric may vary from a few months to five or six years and the severity of the symptoms from practically none to involutional melancholia.

The patient has some moderate psychotic symptoms which, if they become worse, must be classified as involutional melancholic.

Treatment should consist of theelin or other equally potent estrogen in oil, 2,000 international units every other day until she shows definite improvement (absence of depression and psychosis); then give 1,000 international units intramuscularly three times a week for from one to two months, and if improvement continues gradually taper off the dosage. If symptoms should recur some time after the cessation of treatment, it should be reinstituted. Along with injections it is well to give the patient effective dosages of mild sedatives four times a day, such as chloral hydrate, elixir of phenobarbital and sodium

bromide, to quiet the nervous system, until the endocrine treatment becomes effective. Some hypnotic tablet may be given at bedtime for sleep for the same reason.

Roentgen treatment of the ovaries to inhibit or destroy their function is unnecessary, for the ovaries are hypofunctioning at present and there is a possibility that the ovaries might have some other activity besides graafian follicle development and ovulation.

Be patient and persistent with the treatment and considerate of the patient, for she is physiologically ill.

One must be sure that there are no other ailments, for the patient must be treated as a whole and not as an aggregation of glands.

PROGRESSIVE ANKYLOSING SPONDYLITIS

To the Editor:—Since April 1936 I have had under observation a case which has caused me considerable concern. A man, aged 27, married, 5 feet 10 inches (178 cm.) in height, weighing 140 pounds (63.5 Kg.), orginally complained of pain in the sacro-iliac region with associated sciatica, with a possible history of injury some three years previously. The teeth and tonsils had been removed; the nose, ears and eyes were normal; there was no evidence of infections in the sinuses or abdomen; the prostate was negative to special examination. A flocculation test was negative. The urine was normal. The sedimentation rate at one hour was 99 mm. X-ray examination of the chest was negative. X-ray examination of the spine showed a slight dorsal scoliosis with a marked hypertrophic change in the sacro-iliac region, with complete obliteration of the right joint and partial obliteration of the left. The heart and lungs were normal. The entire physical examination was negative with the exception of some restriction of motion in the sacro-iliac region. The neurologic examination was entirely negative. Hemoglobin was 85 per cent; white blood cells numbered 16,000, red blood cells 4,500,000. The differential count was normal. The Wassermann and Kahn reactions were negative. The Widal test was negative. Agglutination tests for Bacillus paratyphosus A and B, Brucella melitensis and Bacterium tularense were all negative. A course of Clossen and Wetherby's vaccine was given without any benefit. A sacro-iliac belt gave moderate relief for a time. A Baer manipulation was attempted for relief of the sciatica and was moderately successful. Later the patient developed severe muscle cramps in the abdominal muscles as well as in the muscles of the chest and the legs and thighs. He was given ten injections of 10 cc. of 10 per cent calcium gluconate, which gave considerable relief to the cramping of the muscles. He was examined by the Mayo Clinic and a course of intravenous injections was suggested. He had a slight chill from the first injection and about two hours' quiet sleep from the remainder of the injections. His hemoglobin had dropped to 52 per cent at this time and he was given a three weeks course of ventriculin and iron and the various vitamin concentrates, which increased the hemoglobin to 75 per cent. After the treatment was stopped it immediately dropped in a few days to 52 per cent, with white blood cells 16,000, red blood cells 4,500,000 and differential negative. At this point he was started on a course of Compolon injections and has had two of them to date. At present his neck is stiff and he stoops forward about 10 degrees although x-ray examination of the cervical spine is negative. My diagnosis of chronic infectious spondylitis was confirmed by the Mayo Clinic. Any suggestions that you can offer as to where I might find the foci of infection in this case or any therapy you may suggest as offering some hope for keeping up the hemoglobin or something that might offer some relief from the constant pain and spasms would be greatly appreciated. At no time has he been disabled from work of a clerical type, although I marvel at how he can continue it in his present condition. His best friend, as he puts it, is Empirin Compound, which he takes on an average of 30 grains (2 Gm.) daily for the partial relief of pain. Any suggestions you may offer will be greatly appreciated.

C. KENNETH COOK, M.D., St. Paul.

ANSWER.—This detailed description of the symptoms and signs of progressive ankylosing spondylitis in a young white man is compatible with a diagnosis of Strümpell-Marie's disease. This author called the condition rhizomelic spondylosis because of the characteristic progressive involvement of the spine (including the sacro-iliac joints) and one or more "root" joints (hip or shoulder) and comparative to complete freedom in other appendicular articulations Both Strümpell-Marie and later contributors on this subject have thought that a low grade infection was the etiologic factor, but this has never been proved to be true. The gonococcus was early under the greatest suspicion, but this hypothesis remains unconfirmed, if not actually disproved. Typhoid carriers (the gallbladder is usually then the focus) have been known to develop a similar progressive ankylosing spondylitis. Treatment has been varied and has included everything ever suggested by those who treat arthritis. Neither removal of all possible foci nor any therapy has been successful in arresting the progress of the disease. The prognosis, if the diagnostic impression proves to be correct, is always ankylosis of the spine and sacro-iliac joints, probably of one or both hips and possibly of one or both shoulders. The average course of the disease is about five years. When ankylosis is complete and the disease has "burned itself out" there will be little if any pain and the degree of disability will not only depend on the number of joints ankylosed but will also determine the effectiveness of orthopedic measures, which should always be carried out during the active phase of the disease. These measures are undertaken to hold the spine in the erect position and the root joints that may be involved splinted in a position to make possible maximum function when and if ankylosis occurs.

In addition to the therapy outlined for the anemia, a high caloric diet having a high content of milk or milk products should be given, reinforced with concentrates containing vitamins A, B, C and D.

X-RAY DOSAGE

To the Editor:—With a 30 milliampere radiator type Coolidge tube at 12 inches distance without filter, 3 milliamperes is used for three minutes. What part of an erythema or skin unit dose is developed, considering the skin to be normal? In terms of milliampere time, what is considered an erythema dose? Please omit name.

M.D., Iowa.

ANSWER.—The question, as asked, is unanswerable, for the correspondent does not give any of the voltage factors. Unless one uses a recording roentgen dosimeter, one must know and use the following factors in determining x-ray dosage: voltage, milliamperage, distance, filter and time. The omission of any of these factors makes it impossible to calculate the dosage.

Assuming that the voltage used is 100,000, a test was made at this voltage with a currently employed Snook machine, a 30 milliampere tube, at 12 inches distance from focus of tube to skin, using 3 milliamperes for three minutes. The dosage (in air) delivered was 180 roentgens, which is about 60 per cent of an erythema dose if delivered at one sitting, the skin assumed to be normal.

Unless an instrument has been carefully calibrated by a competent scientist with proper measuring instruments, it is unscientific and dangerous to attempt to state an erythema dose in milliampere-minutes.

ACUTE ORCHITIS

To the Editor:—A white boy, aged 15 years, who is perfectly sound physically and normal in all respects, had a swelling of the right testicle Nov. 11, 1936, when I first saw him. The testicle was about 25 per cent larger than the left testicle. The involvement apparently was not in the epididymis but distributed throughout the testicle. He had a temperature ranging between 100 and 103 F. for five days, at which time the swelling in the testicle had subsided and the temperature was normal. The boy had been playing football and I assumed that he had been injured in this testicle. However, the same thing occurred in the left testicle on December 18. The clinical course was about the same as with the right side. The vas was not enlarged or tender. The prostate was normal The seminal vesicles were equal in size and at no time was pus found in the urine. The white blood cell count on two occasions was 9,000, with a normal percentage of neutrophils. Jan. 4, 1937, the left testicle again began swelling and he was found to have a temperature of 102 F. The physical condition was the same as has been outlined before. January 8 the swelling had subsided and the temperature was normal. I would appreciate any information that you might give me in making the diagnosis in this case. Please omit name.

M.D., Georgia.

ANSWER.—The correspondent has apparently ruled out any involvement of the epididymis. The discussion can be limited to the acute lesions of the testis proper. Of these the first to be discussed will be acute orchitis.

Acute orchitis may be either an ascending type of infection from the posterior urethra by way of the lumen of the vas through the epididymis—epididoorchitis—or metastatic and as such is not an uncommon complication of many acute infectious diseases. Of these the one that most frequently produces orchitis is mumps. Acute orchitis also has been noted in typhoid as well as in paratyphoid fever, influenza, diphtheria, scarlet fever, acute tonsillitis, and many others. On the other hand, an attack of acute orchitis may be due to the presence of a focus of infection in other parts of the body, such as an abscessed tooth, an infected sinus or furunculosis. The correspondent does not state whether or not the patient recently had one of the acute infectious diseases, which may have preceded the acute involvement of the testicle; and this is important, of course. Perhaps the patient had some transient infection that was not recognized and in an epidemic of influenza such as the recent one epididymitis, pyelitis and prostatitis have followed in the wake.

Finally, it is necessary to direct attention to a condition that is frequently overlooked or not considered in the differential diagnosis—torsion of the testicle (or, more correctly, torsion of the spermatic cord), a condition caused by sudden twisting of the cord so that the blood supply to the testicle is shut off. This condition is often mistaken for acute orchitis and acute epididymitis. Although the cases are generally associated with a history of straining (football, baseball, wrestling, rough housing), cases have been recorded in which the torsion occurred

in the night while the patient was sound asleep. As a rule, cases of torsion are unilateral.

The absence of a history of trauma, especially preceding the involvement of the second testis, would lead one to suspect that the orchitis is metastatic in origin.

BILATERAL EDEMA OF ANKLES

To the Editor:—What do you believe is the cause of bilateral edema of the ankles in a man of 72 whose heart is normal except for a mild mitral systolic apical murmur and extrasystoles at irregular intervals? The edema has been present for about four months, being less in the mornings. The murmur, extrasystoles and rapid pulse (80) have been present to the patient's knowledge for at least thirty years. The blood pressure is 140 systolic, 74 diastolic. There are a few varicose veins in both legs, which have been injected with quinine hydrochloride-urethane during the last month without any appreciable difference in the edema. Digitalis 1 cat unit daily has been used for five weeks in the hope that it may relieve the swelling of the ankles. The kidneys apparently are normal. There is no nycturia or abnormality in the urine. The edema at times extends up to the knees when the patient is on his feet a great deal. Physical examination is essentially negative otherwise. What else could be done in this case? Please omit name.

M.D., California.

ANSWER.—In making the following suggestions it is assumed that there is no mechanical obstruction to the return flow in the extremities. Such obstruction might be caused by an old thrombophlebitis, a lymphangitis with chronic induration, or even the varicose veins. Apparently this is not a renal edema. At the age of 72, cardiac edema is by far the most common. With the details as given at hand, one suspects a mild cardiac failure probably due to degenerative heart disease. Based on this assumption, the following suggestions are offered:

Digitalis should reduce a cardiac edema unless the heart is incapable of responding. This does not seem likely in the present instance. One cat unit equals about 0.1 Gm. of powdered leaf. This is a rather small daily dose unless enough of the drug was given previously to insure the optimal digitalis effect. After the optimal response is obtained it may often be maintained with 1 cat unit daily. In this case the dose might be cautiously increased to 2 units (0.2 Gm.) or even 3 units (0.3 Gm.) daily for a time. In view of the frequent extrasystoles, careful watch should be maintained for signs of increased cardiac irritability.

The purine base diuretics theobromine and theophylline compounds are said to cause an improved cardiac action. Whether or not they have a local action on the kidney is a subject for argument, but at any rate they frequently cause a diuresis that is of value in reducing edema.

The acid-base salts ammonium nitrate or ammonium chloride, 2 Gm. three or four times daily, will often bring about a considerable diuresis. They are not well tolerated by the stomach and should not be continued over too long a period.

The mercurial diuretics salyrgan or mercupurin, given in doses of from 0.5 to 2 cc. intravenously or intramuscularly, frequently produce a profound diuresis. The mobilization of fluid is enhanced if the acid base salts are given for three or four days preceding the injection of the mercurial.

SCHILLER TEST FOR CANCER OF CERVIX

To the Editor:—Will you be so kind as to inform me of the name of the test for cancer of the cervix by the topical application of iodine, and give a brief outline of the procedure and reading of the test?

J. M. KERCHEVAL, M.D., Wolcottville, Ind.

ANSWER.—The test for cancer of the cervix to which the correspondent refers is known as the Schiller test:

Schiller, Walter: Early Diagnosis of Carcinoma of the Portio Uteri, *M. J. Surg.* **26:** 269 (Nov.) 1934.
Zur Frühdiagnose des Karzinoms der Portio uteri, *Monatschr. f. Krebsbekämpf.* **2:** 7 (Jan.) 1934.

It is preferable to use Gram's solution, consisting of 1 Gm. of iodine and 2 Gm. of potassium iodide in 300 cc. of water. The use of this dilute aqueous solution of iodine results in sharper differentiations than does ordinary compound solution of iodine. The procedure for staining is as follows: After the cervix is fully visualized by means of a bivalve speculum, it is thoroughly dried and inspected and from 20 to 30 cc. of Gram's solution is poured into the vagina. The excess solution is removed by means of a cotton pledget. The normal cervix should be stained evenly a dark brown. Pathologic lesions fail to take the stain and stand out as sharply demarcated yellowish areas.

The test depends on the affinity for iodine of glycogen present in the epithelium of the portio. The normal squamous epithelium of the cervix contains glycogen in varying amounts, depending on estrogenic activity. Pathologic areas and particularly carcinoma cells do not contain glycogen and therefore fail to be stained by iodine. In evaluating the Schiller test, one must have some experience. About four out of five patients who present themselves for examination will have a negative test, in which case the entire surface of the cervix has stained evenly. These patients do not have carcinoma of the portio of the cervix. The areas that fail to stain may or may not represent early carcinoma. In practice it has been found that only 15 or 20 per cent of these areas are malignant. An erosion of the cervix will not stain with iodine and will remain slightly reddish. In the earliest stages an erosion consists largely of cervical epithelium, which is not affected by iodine. It is probably good practice and the safest procedure to take a biopsy and submit to microscopic examination bits of tissues from all areas that do not stain. Superficial areas can be best removed with a sharp spoon curet, but one must attempt to include the transition zone between normal and pathologic epithelium.

The Schiller test is of value only in squamous cell carcinoma of the cervix. The existence of adenocarcinoma of the cervical canal or of the corpus must not be overlooked. These must be ruled out by probing the cervical canal and by dilation, curettage and a microscopic examination of the curettings.

RABIES

To the Editor:—Here in Louisiana we are experiencing the usual mad dog scare. Public officials of small cities, including veterinarians, supplemented with the propaganda of manufacturing firms, find it to their interest to impress the public with their efficiency. Veterinarians, not unlike doctors, advise "shots," based only on hygienic reports of serum manufacturers, and resort to oppressive measures to stamp out the so-called rabies epidemic. Right now in this county, besides restrictions placed on dog owners by city officials, the police jury of the parish (county) has passed an ordinance requiring all dog owners to take their animals to a public clinic, to be held at various points in the county, just as cattle owners are compelled to take their stock to public dipping vats for the cure of ticks. In such measures the small city or town newspapers cooperate with these officials with sensational headlines and stories of many dogs running amuck and biting children and stock. And yet a human case of hydrophobia is rarely heard of. In the last few weeks, dogs' heads have repeatedly been sent to the Parish Health Clinic and I have yet to hear of one that was not a reported positive for hydrophobia. What is the present scientific status of the one injection preventive and curative antirabies serum as applied to dogs? Is it not a fact that many dogs have developed rabies after one of these live virus single injections? Are Negri bodies, on which the diagnosis of rabies in animals is dependent (the specific germ never having been isolated), now considered infallible proof of rabies? Are they sufficiently easy to discover as to make examinations by ordinary bacteriologists, not specially skilled, conclusive? Concerning Negri bodies: Dorland's Medical Dictionary, 1935, says: "Oval or round bodies seen in protoplasms and *sometimes* (italics are mine) in nerve cells of animals dead of hydrophobia." The fact that the word "sometimes" is used would seem to indicate that bacteriologists are not always able to make a diagnosis, even when competent and the animal has actually died of hydrophobia. I have been engaged in promoting and breeding a famous breed of dogs for forty years, continuously and uninterruptedly; in these four decades I have never passed a single year in which I did not exhibit the dogs as a gentleman's sport. In all this time I have never known or heard of a professional handler or exhibitor having hydrophobia from being bitten; and many of these professional handlers who make the circuit of dog shows profitable in handling the animals of wealthy sportsmen do not believe there is any such disease as hydrophobia. Of necessity they are frequently bitten by dogs they have taken under their care. It is a fact that some able veterinarians deny the existence of this malady. I do not agree with this but I do doubt the safety and advisability of these single live virus injections. For years epidemics of "running fits" have been existent all over the dog world and the cause is unexplained. I have seen it go through my kennels repeatedly. Young high bred dogs, under excitation or physical exertion, suddenly run wild, barking and yelping violently, seeking some dark corner, hole or cellar in which to hide. Within half an hour the malady subsides, the animal is dull and stupid and recovers, and in the next day or two the process may be repeated. This is sufficient to inspire the cry "mad dog!" and for the newspapers and the small vested interests to do the rest.

FAYETTE C. EWING, M.D., Alexandria, La.

ANSWER.—Rabies in dogs is subject to periodic waves of increase in different regions. Only recently an extensive outbreak occurred in Chicago. Many persons were bitten and deaths from human rabies occurred. In connection with this matter the following statement in the review for 1936 by the president of the Rockefeller Foundation is highly significant: "In 1936 the Foundation began laboratory and field work in relation to rabies, which has become an increasing menace, particularly in some of the Southern states. Little has been done on this disease since Pasteur's day; and it is hoped that a quicker and more positive test for rabies in animals may be developed, and perhaps a less cumbrous method of vaccination." The very best that can be said for the one injection of antirabies vaccine is that it is still no further than in the experimental stage. Whether many dogs have developed rabies after the injection of live viruses is extremely difficult to determine, but that possibility cannot be denied. Negri bodies

are sufficiently characteristic to be regarded safely as diagnostic, but the examination of suspected cases, like all examinations of such nature in general, are of course reliable only in competent hands.

SPERMATORRHEA

To the Editor:—A white man, aged 21, single, has noticed a "milky" color to the urine intermittently for the past ten months. He experiences no pain on urination but is troubled with frequency during the daytime. These episodes of "milky" urine occur about twice a month. The urine is clear for a few moments on these occasions and suddenly the stream changes to a thick white color. There is no discharge present before or after these bouts. I have examined the urine on two of these occasions and found the milky fluid loaded with live sperm. No pus cells or any other organisms were present. Prostatic smears have been repeatedly negative, as have the specimens of urine between the spells. The patient has never had gonorrhea or any other prostate disease. His physical examination is essentially normal. Blood Kahn and Hinton reactions are negative. The genitals appear normal in development. The condition has caused the patient a great deal of mental concern. I would appreciate any information as to the etiology of this unusual condition and also what measures I might take to overcome these episodes. Please omit name.

M.D., Maine.

ANSWER.—The condition is occasionally seen in young persons who are not married; it is called spermatorrhea and as far as we know is of no clinical significance. In a certain few individuals there is an apparent laxness in the ejaculatory ducts, allowing an occasional emptying of the seminal vesicles into the prostatic urethra. As noted in the present case, the secretion gives a milky cast to the urine and on microscopic examination shows nothing more than vesicular secretion and live sperm cells. The condition has no clinical significance and as far as is known there is no indicated treatment. In almost all instances the spermatorrhea will disappear following the marriage of the individual, with regular emptying of the seminal vesicles. The only treatment is the reassurance of the patient.

DISCOLORATION BY BLOOD IN PATHOLOGIC SPECIMENS

To the Editor:—Kindly give me the best method for the removal of the discoloration caused by blood in specimens preserved in 10 per cent solution of formaldehyde. Is there any method or solution which may be used at first to obviate this discoloration? I have a number of fetuses which are very dark. Would it be possible to apply the Spalteholz method of clearing to such material? I have been unable to find any references in English to this method. Kindly omit name.

M.D., Michigan.

ANSWER.—Much of the discoloration caused by blood in specimens preserved in solution of formaldehyde is due to reduction of blood pigments by the formaldehyde. Immersion of such specimens in solution of hydrogen peroxide, preferably in sunlight for from one to two days will remove much of the brown discoloration. If fetuses are preserved in Kaiserling solutions in the regular way and not left in Kaiserling I too long, much discoloration will be prevented.

As part of the Spalteholz method of clearing involves the bleaching of specimens in peroxide, it is probable that Spalteholz's method of clearing will give good preservation even with discolored fetuses. A satisfactory method of utilizing the Spalteholz principles is the following:

1. Fix in 10 per cent solution of formaldehyde.
2. Bleach with solution of hydrogen peroxide in sunlight for two days.
3. Dehydrate with 70 per cent ethyl alcohol one day, 95 per cent ethyl alcohol one day and 100 per cent ethyl alcohol one day.
4. Place in benzene for one or two days.
5. Place in methyl salicylate full strength.

(There will be air bubbles at this stage; pump out in a vacuum for from two to three hours.) Store in methyl salicylate.

WORD BLINDNESS

To the Editor:—Please give me some information about the latest treatment in word blindness.

B. M. HOWLEY, M.D., New Brunswick, N. J.

ANSWER.—The latest treatment in word blindness aims at overcoming the difficulties created by the perceptual peculiarities of the patient. In learning to read, emphasis is placed on auditory and kinesthetic types of stimulation. Phonetic rather than visual methods are used in the teaching of reading with such children. Kinesthetic methods involve the tracing of letters, sometimes the use of letters cut out of wood so that actual contact can also be used in becoming familiar with shapes and forms of letters. Considerable effort at times must be expended in overcoming the tendency to reverse images. The devices that aid the child in following the printed material in the proper direction are used. For some children, when disturbances in the eye movements can be demonstrated such mechanical devices as the mentronoscope are used to improve ocular coordination and to speed up the rate of reading. Often the psychologic problems produced by the disability are more difficult to overcome than the mechanical effect of the disability. The discouragement and anxiety that children develop on account of their inability to read may result in a tremendous resistance to learning to read at all. This may have to be overcome before progress can be made in teaching them the mechanics of reading.

See "Children Who Cannot Read," by Marian Monroe, University of Chicago Press, 1932.

NEUROLOGIC SYMPTOMS DUE TO TRAUMA OR ARTERIOSCLEROSIS

To the Editor:—Dec. 5, 1935, my patient was working on the county highway with a gang of men digging rock from the side of the road. A piece of earth weighing over 200 pounds fell on him, pinning him to the ground. He sustained a fracture of both bones of the lower right leg just above the ankle. He was brought to the hospital, where the parts were molded properly and a plaster cast applied. The man was in this cast for about ten weeks. The cast was removed frequently during the last weeks to massage and inspect. He got up on crutches and was able to go out as well as to the compensation board for examination. Suddenly he began to complain of pain in the lower part of the back, lack of strength, and difficulty in getting about. He insisted that he could not use his crutches and had to go to bed. He was given massage for his back. He had slight secondary anemia. He had weak muscular coordination in the hands and legs, slurring of speech, intestinal cramps, and impaired sensation of the skin. He was brought to the hospital about March 1, 1936. He became progressively worse until about the last of July. Then he had to be taken to the state hospital because he was unmanageable in the local hospital. He died there after about two weeks. Could this man have had a marked accentuation of an admitted (arterio) sclerosis to such a degree that his spinal cord and nervous system degenerated so rapidly all on account of the accident he suffered in December, three months before he started to show the spinal symptoms? Was the spinal breakdown directly caused by his injury? The Wassermann reaction of the blood was negative and the urine was normal. He had been a drinker to some degree but never to interfere with his working regularly. Have you any suggestions about trauma and spinal cord injury coming on late, especially in relation to arteriosclerosis?

E. L. FINLEY, M.D., Oneida, N. Y.

ANSWER.—It is quite possible that an injury as severe as the one described may have precipitated the symptoms resulting from a condition which prior to the accident had not yet reached a definite clinical stage. There is no evidence to show, however, that an accident of this type could in itself have been the sole etiologic factor in the bringing about of a generalized neurologic syndrome which involved speech, as well as muscular coordination in the hands and other regions far removed from the site of the injury to the spine or the spinal cord.

SYPHILIS IN PREGNANCY

To the Editor:—I am treating a woman, aged 21, for congenital syphilis. Her chief symptoms were keratitis and coryza. At the onset of treatment in January 1936 the blood Wassermann reaction was plus 4 and the spinal fluid Wassermann reaction was negative. She was given three courses of bismuth in oil, 120 mg., ten, eight and six doses, with two intervening courses of neoarsphenamine (maximum dosage 0.45 Gm.) continuously. The coryza disappeared completely. The keratitis has resolved to a point at which objects can now be discerned. Three months intervened. The blood Wassermann reaction went down to plus 2 after six months of treatment but was 4 plus at the end of the course. It is now plus 4. I am planning six months of treatment this year, using bismuth in oil and neoarsphenamine as before but in smaller dosage. Will you please criticize the treatment? I shall welcome any suggestions for the future. I have advised her that it is safe to have a baby but to have treatment during pregnancy.

M.D., Pennsylvania.

ANSWER.—There is little criticism to offer of the treatment given thus far. The two courses of bismuth planned for this year should be augmented by two more courses of neoarsphenamine, followed by several courses of bismuth injections a year for two or three years to come.

The advice with regard to the question of pregnancy is open to criticism or at least to discussion. The possibility of this girl's having an infected child is small (especially if treatment is started early and continued throughout the pregnancy), but the effect of the pregnancy on the keratitis presents a considerable hazard. In congenitally syphilitic girls in whom the interstitial keratitis appears late, as in this young woman, pregnancy will frequently precipitate an attack of interstitial keratitis or will cause a recurrence of a previous attack. In view of her age, 21, it would seem advisable, therefore, to postpone the possibility of her becoming pregnant for at least five years, at the end of which time the advisability of her having a child should be reconsidered.

LOW BACK STRAIN

To the Editor:—A white man, aged 35, complains of pain in the lower part of the back, which he dates to a time when he stooped down and arose suddenly about four years ago. The pain is most severe when he bends forward or lifts. His occupation compels him to be on his feet all day. He is well developed, is about 5 feet 9 inches (175 cm.) in height and weighs about 165 pounds (75 Kg.). His posture is good, and no abnormal curvature of the spine is apparent. Examination revealed nothing significant except a slightly enlarged prostate. There is no tenderness over the site of pain. Cystoscopic examination gave negative results. The urine, the blood count and the blood chemistry were normal. A roentgenogram of the spine revealed a small fragment of bone posterior to the spine of the fourth lumbar vertebra; it is oval and about 0.5 cm. in its longest diameter. There is also cloudiness between the last lumbar vertebra and the sacrum. The rest of the roentgenograms are normal. After several consultations the patient was given a choice between surgical intervention and diathermy with the wearing of a plaster jacket. One surgeon advocated the removal of the fragment of bone, one a fusion operation and another the plaster jacket and diathermy. What is the wisest step?

M.D., New York.

ANSWER.—Unless there is tenderness on palpation at the site of the small fragment posterior to the spine of the fourth lumbar vertebra, there would seem to be little indication for its removal. The history and the objective observations suggest strain of the lower part of the back. Injury to the intervertebral disk between the fifth lumbar vertebra and the sacrum with displacement of some of the disk substance backward into the spinal canal should be considered, but such an injury is most commonly associated with pain along the course of the sciatic nerve. It should be possible by manipulative tests to determine whether or not the pain in the back is related specifically to the sacroiliac joints or to the lower lumbar section of the spine. It seems most inadvisable to plan an operative fusion until more conservative measures have been given a thorough trial.

A plaster cast, which should be followed after six or eight weeks with a good brace, diathermy and corrective exercises such as have been described by Goldthwaite, Williams and others, may be expected to lead to restoration of normal function in a majority of such cases. Should this program fail, fusion of the joints in question might be necessary, but only if it was reasonably certain which joints were causing the trouble.

MOSQUITO REPELLENTS

To the Editor:—Is there anything more effective than oil of citronella for keeping mosquitoes away from the body? If not is there something to put in the oil to keep it from evaporating so quickly?

LEONARD T. CARLSON, M.D., Minneapolis.

ANSWER.—All repellents directed against mosquitoes have one common drawback: the most efficient ones are highly volatile and their effect rapidly wears off. A successful repellent, besides being obnoxious to the mosquito, should have the following requirements: it should have a base that will retard rapid volatilization of the active principle, it should spread readily, and it should have such a consistency that it will adhere to the exposed body surfaces. Of the large number available the most satisfactory formula is probably oil of citronella 15 cc. (one-half ounce), spirit of camphor 7.5 cc. (one-fourth ounce), cedar wood oil 7.5 cc. and white petrolatum 60 Gm. (2 ounces). The use of a phenol soap for washing may be of aid. For lawn parties or open air gatherings, frequent undertable sprayings with Flit or any of the antimosquito sprays insures comfort for a considerable time.

BRASS PLUMBING

To the Editor:—My dwelling is equipped with a water system in which the water for drinking purposes and cooking purposes is supplied through brass pipes. These pipes conduct both hot and cold water for all domestic and family purposes. The chemical composition of these brass pipes, as accurately as I can ascertain, is 67 per cent copper and 33 per cent iron. The household water supply that flows through these pipes is known to contain a small percentage of lime, probably coming from some normal deposits in the earth. The thing I wish to know is whether the brass pipes will have any injurious effect on the water, and thus an injurious effect on the health of my family during future years. The pipes were installed with the understanding that they were more durable and satisfactory than iron, but there has been some question raised by neighbors as to their long-time effect on the health of the family, and I would like a medical opinion on that point.

M.D., Maryland.

ANSWER.—This query refers to brass pipes as being composed of copper and iron. Properly, brass is composed of copper and zinc, although this term is applied to a large number of alloyed metals, even those containing as high as 50 per cent of lead with copper. In any event, any brass will contain some lead as an impurity, but probably plumbing brass will not contain a quantity of lead beyond 1 per cent. If this possible source of lead poisoning together with lead connections within buildings and lead soldering of brass pipes is eliminated, apprehension need not be felt as to the toxic properties from such metals as copper, zinc or iron in plumbing. The daily intake of the average adult is perhaps as high as 4 mg. of copper. This is derived from food, drinks and occasionally drugs. Some copper seems to be necessary in normal human economy. It is therefore conceivable that the small amount of copper derived from brass plumbing conduits may serve a beneficial effect. It has been observed that copper is serviceable in the treatment of certain types of anemia.

EXCESSIVE SALIVATION FROM DENTURES

To the Editor:—A man, aged 53, has been wearing false teeth (upper and lower plates) for fourteen months. He takes them out at night. He complains of an excessive amount of salivation. There is a formation of ropy thick mucoid saliva that is a constant bother to him. It is making him nervous and he desires relief. He has tried a refitting of plates with no relief. His dentist is an expert, at least one of the best in the state. A good number of dentists, physicians and nose and throat specialists have nothing to offer. His work prevents him from going without his teeth for a period.

WILLIAM A. FRITZ, M.D., Hickory, N. C.

ANSWER.—We have been unable to find any specific cure for this condition. It is apt to be caused from some kind of irritation such as dentures improperly fitted, or it could be allergic, the denture material itself causing the irritation. Diet might also enter into this picture. We would suggest reducing carbohydrates, giving an abundance of fruit juices and increasing the liquid intake. Aside from this there seems to be little known about the condition.

ALLERGY IN DISTRICT OF COLUMBIA

To the Editor:—A white man, aged 31, had an allergic attack of one month's duration twice, in January and from Thanksgiving to Christmas of 1936. The attacks can best be described as an angioneurotic edema of the face, with multiple synovial effusions and urticaria. The lesions shift from one locality to another, leaving no permanent sequela. There is no response to the administration of epinephrine, ephedrine or calcium salts intravenously, each attack apparently running a thirty day course and spontaneously clearing up on its own accord. Skin tests with forty of the commoner antigens revealed four reactions graded two or three plus but not sufficiently positive to be diagnostic. There is no possibility of these attacks arising from a thermic sensitivity or from a change of living conditions in the cold weather; likewise, all possible foci of infections have been eliminated. The patient has become despondent and thinks that he is doomed to undergo a thirty day attack every winter. Would I be justified in subjecting the patient to the gamut of two or three thousand skin tests in an effort to find a specific antigen? Is there any plant emanation in the District of Columbia which gives rise to allergic attacks in the winter? Could you advise me of any other procedure for diagnosis or treatment? Kindly omit name.

M.D., District of Columbia.

ANSWER.—If the correspondent is correct in the assumption that the symptoms of the patient are of allergic origin, exciting causes both from within and from without need to be investigated. There are no plants in bloom in the District of Columbia during the winter months. However, contact with the leaves and stems of house plants should be kept in mind and "patch tests" performed with them. Similar tests should also be performed with all materials which the patient handles in the course of his occupation.

A list of the articles that enter into his diet should be carefully kept and should serve as a basis for a complete series of skin tests. The possibility of drug idiosyncrasy should not be overlooked.

The lack of response to epinephrine or ephedrine raises some doubt about the allergic character of the attacks. A blood smear should be studied, and the question of worm infestation demands consideration.

USE OF DIPHTHERIA ALUM TOXOID

To the Editor:—In the directions accompanying a vial of diphtheria alum toxoid the makers caution against its use in children after the age of 8 years but do not give their reasons. Why is this warning given and what should be done when this toxoid is used in older children?

M.D., Iowa.

ANSWER.—Above the age of 8 and more particularly after 12, severe reactions sometimes occur when the customary dose of toxoid or alum precipitated toxoid is injected. These reactions may be both local and constitutional.

In susceptible persons beyond the age of 8 it is sometimes well to inject 0.1 cc. of toxoid or alum precipitated toxoid intracutaneously before administering any of the immunizing agent subcutaneously. In fact, it has been claimed that 0.1 cc. of alum precipitated toxoid when injected intracutaneously is equivalent in its efficiency to 1 cc. given subcutaneously. Intracutaneous injections are practically devoid of constitutional reactions.

In some contagious disease hospitals, doctors and nurses with positive Schick tests are always immunized with toxoid. No

consideration is given to the age factor and comparatively few severe reactions are observed. Some physicians still prefer to use toxin-antitoxin for the purpose of establishing active immunity to diphtheria in older persons.

IODIZED SALT IN BOARDING SCHOOL

To the Editor:—Kindly advise me as to the desirability of the routine use of iodized salt in a girl's boarding school with an age range of from 12 to 18. The incidence of thyroid disease, chiefly adenoma, is relatively high here. I have been impressed with the reports of Marine and Kimball but am a little uncertain on account of adverse reports by Lahey and others.

ALEX F. ROBERTSON JR., M.D., Staunton, Va.

ANSWER.—It certainly would be desirable to carry out some method of prophylaxis against goiter in a girl's boarding school with an age range of from 12 to 18. The routine use of iodized salt, preferably one of the nationally advertised brands, would probably be desirable. This method is adequate, easiest of all to carry out and teaches the fundamental principle that goiter is one of the deficiency diseases. Because of the adverse reports mentioned the state health department of Michigan has been making a careful study since 1928, and it has never found a case in which there was the slightest suggestion of injury to children of this age due to the use of iodized salt.

DRUGS USED TO SHORTEN MENOPAUSE

To the Editor:—One of my patients tells me that several months ago a physician in another state told her about a new medicine that is used to shorten the menopause. She did not take the treatment at that time but now feels that she would like to take it. Is there a medicine on the market that is useful for the purpose mentioned, or is it likely that she has in mind some remedy to relieve the symptoms of the menopause? If there is a remedy that will shorten the menopause, where can it be obtained?

BYRON E. CRAWFORD, M.D., Chamberlain, S. D.

ANSWER.—There is no medicine that will shorten the menopause, unless the patient interpreted radiotherapy to be a form of medication. Likewise, as surmised, the patient may have been told only about medicines that will alleviate the disagreeable symptoms of the change of life.

INTRAMUSCULAR INJECTION IN BUTTOCKS

To the Editor:—On page 1134 of THE JOURNAL, March 27, under the heading "Intramuscular Injection in the Buttocks," the statement is made "Give the injection in the upper and outer quadrant always." This question had presented itself on several previous occasions; therefore I consulted Dr. M. B. Parounagian, who in response to a letter of June 25, 1936, replied: "Upper and inner quadrant because the patient does not sit on that region, less blood vessels and away from the sciatic nerve causing less pain." I have followed Dr. Parounagian's suggestion in directions for use of injectable aqueous colloidal bismuth. However, I would appreciate your comment as I wish to distribute authoritative information concerning such matters.

HARRY NOONAN, Long Island City, N. Y.

ANSWER.—In getting ready for an intramuscular injection in the buttocks, it is well to divide the buttock into quadrants; an invisible line may be dropped down the center of the buttock and a line at right angles to this across the middle transversely. The injection should be given in the outer quadrant at the inner angle. In this area there is the least danger of affecting nerve structures or large vessels, and of causing a deposit that will be irritated when the patient sits down.

TYPHOID VACCINE THERAPY IN NEUROSYPHILIS

To the Editor:—Please send me information regarding the method of carrying out the Nelson technic of typhoid vaccine therapy in treatment of neurosyphilis.

M.D., Wisconsin.

ANSWER.—Nelson's article appeared in the *American Journal of Syphilis* **15**:185 (April) 1931. The method was devised to produce higher body temperatures without the use of unreasonably large doses of vaccine. A single intravenous dose of from 15 million to 250 million, depending on how many previous injections had been given, will produce a temperature of about 102.5 F. In order to produce the desired 105 to 106 F. it was necessary to give as much as from 3,000 million to 4,000 million. Nelson found that if two successive doses are given on the same day the desired temperature may be reached. At the height of the temperature produced by the first dose, usually from two to three hours after the injection, a second injection is given with the resulting elevation of the temperature to 105-106 F. All injections are given intravenously. The first dose varies from 15 million to 250 million and the second dose varies from 20 million to 300 million, depending on how many hyperpyrexial attacks have been produced previously.

GROWTH OF FUNGI IN FOODS

To the Editor:—How many days can prepared foods stand in ordinary temperatures and not become a medium for the growth of fungi? Are common refrigerators free from fungi and a safeguard to our food from such infestations? We would not eat bread and biscuits that had stood for weeks or months. In a lesser degree are not crackers and wafers that stand for days, weeks and months in our groceries infected with fungi? Is it possible for a sclerosed gastro-intestinal tract with little digestive juices not to become infected and mycosed by these long standing unsealed prepared foods?

M.D., Indiana.

ANSWER.—There is no clear-cut evidence to indicate that molds which commonly produce spoilage in food are pathogenic to man. Air and soil contain many mold spores which germinate and grow when they have suitable food, moisture, temperature and time. Common refrigerators are not free from fungi.

ALLERGY TO COOKED ONIONS

To the Editor:—A patient reacts allergically about the eyes to cooked onions but not to raw onions. It is the only food to his knowledge to which he is sensitive. How prevalent are onions as an allergin and why doesn't he react to them raw?

W. EDWARD MCGARVEY, M.D., Jackson, Mich.

ANSWER.—Ordinarily raw foods are more antigenic than cooked foods. Examples of the reverse have not come to our attention. It is possible, however, that if the exposure is due to the volatile material from the onions by way of the respiratory tract the procedure of cooking would throw into the atmosphere much more of that material. Asthma due to the vapors of cooking foods have been described (Feinberg, S. M., and Aries, P. L.: Asthma From Food Odors, THE JOURNAL, June 25, 1932, p. 2280). Onion is a fairly common allergen.

PLASTIC INDURATION OF PENIS

To the Editor:—A man, aged 50, has chronic circumscribed inflammation of the corpora cavernosa, sometimes called circumscribed fibrosis. The patient noticed this mass developing in the penis six months ago. It is gradually extending toward his symphysis. At present it is about 2 cm. long. He has attended numerous physicians for the condition with no results. I would appreciate information on this condition as to treatment and prognosis. Please omit name.

M.D., Florida.

ANSWER.—This condition is known as plastic induration of the penis. It is usually a progressive condition, although roentgen treatment has been known to control it in some cases. However, care must be taken not to include the testes in the exposure to x-rays.

PROTAMINE IN IMMUNIZATION

To the Editor:—Since protamine slows down the absorption of insulin, I wonder whether it would be possible to combine protamine with antigens in order to lessen the danger of anaphylaxis and to avoid other untoward reactions. I have especially in mind the scarlet fever immunizing treatments and antiallergic therapy in general.

R. R. GUTSTEIN, M.D., Kendallville, Ind.

ANSWER.—This is an interesting suggestion, but only by experiment would it be possible to find out whether the combinations suggested can be effected with practical advantage in immunization.

FATALITY AFTER INJECTION OF VARICOSE VEINS

To the Editor:—In your reply to the query entitled "Fatality Following Injection of Varicose Vein" (THE JOURNAL, May 22, p. 1822) you state that allergic reactions following injections of sodium morrhuate are uncommon. In our experience at the V. V. department of the North End Clinic at Detroit these reactions are rather common. We have a series of about fifteen such rather serious reactions, although, luckily, no fatalities. These cases are to be reported soon in the literature by Dr. Saul Rosenzweig and myself. In order to obviate these reactions or, at least, minimize their severity, we worked out the following method of procedure:

The first injection of sodium morrhuate is always less than 0.5 cc. of 5 per cent sodium morrhuate. If the patient shows no allergic manifestations after the first injection, the dose is increased. If the patient does not get any injections for a period of one month or more, on resuming treatments we proceed as if it were a new patient and with even more caution, because the patient may have become sensitized by the previous injections plus the intervening rest period.

It appears to me that the dose of 2.5 cc. of 5 per cent sodium morrhuate given to the patient in the cited query was entirely too large, considering the previous injections and the intervening rest period.

In concluding, I want to call your attention to the fact that there is one sclerosing solution which is entirely free from allergic reactions. This is 20 or 30 per cent of sodium chloride. The disadvantages of this sclerosing agent are two: severe cramp for a few minutes following the injection and the danger of slough if even a few drops of the solution are injected outside the vein.

M. J. GLICK, M.D., Detroit.

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BOARDS

ALABAMA: Montgomery, June 28. Sec., Dr. J. N. Baker, 519 Dexter Ave., Montgomery.

ALASKA: Juneau, Sept. 13. Sec., Dr. W. W. Council, Box 561, Juneau.

ARIZONA: *Basic Science.* Tucson, Sept. 21. Sec., Dr. Robert L. Nugent, Science Hall, University of Arizona, Tucson.

ARKANSAS: *Basic Science.* Little Rock, Nov. 1. Sec., Mr. Louis E. Gebauer, 701 Main St., Little Rock. *Medical (Eclectic).* Little Rock, Dec. 21. Sec., Dr. Clarence H. Young, 1415 Main St., Little Rock.

CALIFORNIA: Sacramento, Oct. 18-21. Sec., Dr. Charles B. Pinkham, 420 State Office Building, Sacramento.

CONNECTICUT: *Medical. Endorsement.* Hartford, July 27. Sec., Dr. Thomas P. Murdock, 147 W. Main St., Meriden. *Basic Science.* New Haven, Oct. 9. *Prerequisite to license examination.* Address State Board of Healing Arts, 1895 Yale Station, New Haven.

DISTRICT OF COLUMBIA: *Basic Science.* Washington, Dec. 27-28 (probable dates). Sec., Commission on Licensure, Dr. George C. Ruhland, 203 District Bldg., Washington.

FLORIDA: Jacksonville, Nov. 15-16. Sec., Dr. William M. Rowlett, Box 786, Tampa.

GEORGIA: Atlanta, Oct. 12-13. Joint-Sec., State Examining Boards, Mr. R. C. Coleman, 111 State Capitol, Atlanta.

IDAHO: Boise, Oct. 5. Commissioner of Law Enforcement, Hon. J. L. Balderston, 205 State House, Boise.

ILLINOIS: Chicago, Oct. 19-21. Superintendent of Registration, Department of Registration and Education, Mr. Homer J. Byrd, Springfield.

KANSAS: Topeka, Dec. 14-15. Sec., Board of Medical Registration and Examination, Dr. J. F. Hassig, 905 N. 7th St., Kansas City.

KENTUCKY: Louisville, Dec. 7-9. Sec., State Board of Health, Dr. A. T. McCormack, 532 W. Main St., Louisville.

MARYLAND: *Medical (Regular).* Baltimore, Dec. 14-17. Sec., Dr. John T. O'Mara, 1215 Cathedral St., Baltimore. *Medical (Homeopathic).* Baltimore, Dec. 14-15. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.

MICHIGAN: Lansing, Oct. 13-15. Sec., Board of Registration in Medicine, Dr. J. Earl McIntyre, 202-3-4 Hollister Bldg., Lansing.

MINNESOTA: *Basic Science.* Minneapolis, Oct. 5-6. Sec., Dr. J. Charnley McKinley, 126 Millard Hall, University of Minnesota, Minneapolis. *Medical.* Minneapolis, Oct. 19-21. Sec., Dr. Julian F. Du Bois, 350 St. Peter St., St. Paul.

MISSISSIPPI: Jackson, Dec. Asst. Sec., State Board of Health, Dr. R. N. Whitfield, Jackson.

MONTANA: Helena, Oct. 5-6. Sec., Dr. S. A. Cooney, 205 Power Block, Helena.

NEVADA: *Reciprocity.* Carson City, August 2. Sec., Dr. John E. Worden, Carson City.

NEW HAMPSHIRE: Concord, Sept. 9. Sec., Board of Registration in Medicine, Dr. Fred E. Clow, State House, Concord.

NEW JERSEY: Oct. 19-20. Sec., Dr. James J. McGuire, 28 W. State St., Trenton.

NEW MEXICO: Santa Fe, Oct. 11-12. Sec., Dr. Le Grand Ward, Sena Plaza, Santa Fe.

NEW YORK: Albany, Buffalo, New York and Syracuse, Oct. 4-7. Chief, Professional Examinations Bureau, Mr. Herbert J. Hamilton, 315 Education Bldg., Albany.

OHIO: Columbus, Dec. Sec., State Medical Board, Dr. H. M. Platter, 21 W. Broad St., Columbus.

OKLAHOMA: Oklahoma City, Dec. 8. Sec., Dr. James D. Osborn, Jr Frederick.

OREGON: *Basic Science.* Portland, Nov. 20. Sec., State Board of Higher Education, Mr. Charles D. Byrne, University of Oregon, Eugene.

PUERTO RICO: San Juan, Sept. 7. Sec., Dr. O. Costa Mandry, Box 536, San Juan.

VERMONT: Burlington, Feb. 8. Sec., Board of Medical Registration, Dr. W. Scott Nay, Underhill.

VIRGINIA: Richmond, Dec. 8-10. Sec., Dr. J. W. Preston, 28½ Franklin Road, Roanoke.

WISCONSIN: *Basic Science.* Madison, Sept. 25. Sec., Prof. Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee. *Medical.* Madison, Jan. 11-14. Sec., Dr. Henry J. Gramling, 2203 S. Layton Blvd., Milwaukee.

WYOMING: Cheyenne, Oct. 4. Sec., Dr. G. M. Anderson, Capitol Bldg., Cheyenne.

NATIONAL BOARD OF MEDICAL EXAMINERS SPECIAL BOARDS

Examinations of the *National Board of Medical Examiners and Special Boards* were published in THE JOURNAL, July 17, page 229.

Arizona April Report

Dr. J. H. Patterson, secretary, Arizona State Board of Medical Examiners, reports five physicians licensed by reciprocity and one physician licensed by endorsement at the meeting held in Phoenix, April 6-7, 1937. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
College of Medical Evangelists		(1928)	California
Rush Medical College		(1926), (1928)	California
Louisiana State University Medical Center		(1935)	Louisiana
University of Pennsylvania School of Medicine		(1934)	Penna.

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
College of Medical Evangelists		(1935)	N. B. M. Ex.

Missouri Reciprocity and Endorsement Report

Dr. Harry F. Parker, State Health Commissioner, reports 12 physicians licensed by reciprocity and 2 physicians licensed by endorsement on June 2, 1937. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
State University of Iowa College of Medicine		(1926)	Iowa
University of Kansas School of Medicine		(1924), (1936, 2)	Kansas
Washington University School of Medicine		(1934)	New York
Creighton University School of Medicine		(1930)	Kansas
New York Homeopathic Medical College and Flower Hospital		(1932)	New York
Meharry Medical College		(1932) Louisiana, (1935, 2)	Tennessee
University of Tennessee College of Medicine		(1935)	Tennessee
University of Toronto Faculty of Medicine		(1911)	California

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Columbia University College of Physicians and Surgeons		(1929)	N. B. M. Ex.
Meharry Medical College		(1934)	N. B. M. Ex.

Rhode Island April Examination

Mr. Robert D. Wholey, chief, Division of Examiners, reports the oral, written and practical examination held by the Board of Examiners in Medicine at Providence, April 1-2, 1937. Thirteen candidates were examined, all of whom passed. Two physicians were licensed by endorsement after an oral examination. The following schools were represented:

School	PASSED	Year Grad.
Georgetown University School of Medicine		(1934)
Boston University School of Medicine		(1935, 2)
Harvard University Medical School		(1930), (1935)
Tufts College Medical School		(1932)
University of Minnesota Medical School		(1927)
St. Louis University School of Medicine		(1927)
Columbia University College of Physicians and Surgeons		(1921)
Jefferson Medical College of Philadelphia		(1935, 2)
University of Pennsylvania School of Medicine		(1928)
McGill University Faculty of Medicine		(1934)

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Georgetown University School of Medicine		(1935)	N. B. M. Ex.
Harvard University Medical School		(1932)	N. B. M. Ex.

Iowa Reciprocity and Endorsement Report

Mr. H. W. Grefe, director, Division of Licensure and Registration, reports eight physicians licensed by reciprocity and two physicians licensed by endorsement from Jan. 23 through May 21, 1937. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Minnesota Medical School		(1934), (1937)	Minnesota
St. Louis University School of Medicine		(1931)	California
Washington University School of Medicine		(1932)	Minnesota
Creighton University School of Medicine		(1924) (1935)	Minnesota, Nebraska
University of Nebraska College of Medicine		(1930)	Nebraska
University of Virginia Department of Medicine		(1932)	Virginia

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Woman's Medical College of Pennsylvania		(1930)	N. B. M. Ex.
McGill University Faculty of Medicine		(1934)	N. B. M. Ex.

New Hampshire March Examination

Dr. Fred E. Clow, secretary, New Hampshire Board of Registration in Medicine, reports the examination held at Concord, March 11-12, 1937. Six candidates were examined, all of whom passed. The following schools were represented:

School	PASSED	Year Grad.
Howard University College of Medicine		(1935)
Harvard University Medical School		(1923), (1935)
Jefferson Medical College of Philadelphia		(1936)
Laval University Faculty of Medicine		(1936)
McGill University Faculty of Medicine		(1936)

Twelve physicians were licensed by reciprocity and three physicians were licensed by endorsement from January 19 through March 22. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
School of Medicine of the Division of the Biological Sciences		(1934)	Illinois
Johns Hopkins University School of Medicine		(1903)	Mass.
Boston University School of Medicine		(1935)	Mass.
Harvard University Medical School		(1929)	Mass.

Washington University School of Medicine	(1933)	Missouri
New York University College of Medicine	(1935)	New York
University of Vermont College of Medicine (1934), (1936)	(1925)	New York, Vermont
Medical College of Virginia	(1928)	Penna.
Albert-Ludwigs-Universität Medizinische Fakultät, Freiburg	(1914)*	New York
University of Edinburgh Faculty of Medicine	(1925)	Vermont

LICENSED BY ENDORSEMENT

School	Year Grad.	Endorsement of
Yale University School of Medicine	(1934)	N. B. M. Ex.
Boston University School of Medicine	(1934)	N. B. M. Ex.
McGill University Faculty of Medicine	(1934)	N. B. M. Ex.

* Verification of graduation in process.

Book Notices

The Diagnosis and Treatment of Diseases of the Liver and Biliary Tract. By John Phillips. Revised by Russell L. Haden, M.D., Head of Department of Medicine, The Cleveland Clinic, Cleveland, Ohio. Henry A. Christian, M.D., Sc.D., LL.D., General Editor of the Series. (Reprinted from Oxford Monographs on Diagnosis and Treatment.) Cloth. Price, $7.50. Pp. 539, with 58 illustrations. New York: Oxford University, Press, 1936.

This work, the manuscript of which was finished only a short time before the tragic death of Dr. Phillips, has been revised by his successor, Russell L. Haden. The book is divided into four parts. The first part begins with an interesting and adequate chapter on the embryology and anatomy of the liver, followed by an account of the physiology of the liver in which the essential features are presented succinctly and without unnecessary elaboration. The next chapter discusses the methods of examination of the liver and of the gallbladder, describing physical examination, examination by the x-rays and the chemical examination of the bile. The methods used in cholecystography are described in detail and the value and limitation of this new method of study are adequately considered. The first part closes with an excellent consideration of liver function tests. Here all the better known methods are discussed in detail and their technic and value considered. The second part of the book describes diseases of the liver. This section contains an excellent discussion of jaundice, cirrhosis, syphilis and certain other less common diseases. The bile ducts and their diseases occupy some forty pages, and this is an excellent section. The final section considers diseases of the gallbladder, with more than forty pages devoted to the discussion of gallstones. The book is readable, is well printed and contains a number of excellent illustrations. Each chapter is followed by a bibliography, which is both comprehensive and modern. The author, while obviously familiar with the literature on the physiology of the liver in its numerous aspects, has wisely restrained himself from discussing everything concerned with the various diseases portrayed. It is obvious to the reader that the author has had a wide experience in the treatment of diseases of the liver and also with the literature on the subject. All in all, the book is a clear and comprehensive discussion of the diseases of the liver and presents a satisfactory summary of the present state of our knowledge.

The Morphine Habit and Its Painless Treatment. By G. Laughton Scott, M.R.C.S., B.A. Second edition. Cloth. Price, 5s. Pp. 105. London: H. K. Lewis & Co., Ltd., 1937.

The author has developed a method for the treatment of morphine and heroin addiction which in suitable cases, he believes, is so free from the distressing withdrawal symptoms that he speaks of it as "the painless treatment." He considers the word "habit" misleading as applied to morphinism. "A bad habit implies voluntary continuance in some asocial or antisocial practice, whereas the dependence of morphinism is as involuntary and relentless as thirst in the desert. It is unusual to meet the addict, however inveterate, whose dearest wish is not the desire to be cured." In established addiction the stimulating effect of morphine is more pronounced than the narcotic. There is a "kick" in each injection which rallies the addict's diminishing powers of mental application and enables him to work at increased pressure without fatigue. If the pulse is taken before and after a dose, its perceptible slowing and strengthening is invariable. The author considers this vagus stimulation, as evidenced by slowing of the pulse, as an important guide to the presence of tolerance. In a normal person as minute a dose as 2 or 3 mg. produces a slowing of the pulse by several beats a minute, a feeling of euphoria and increased vigor. As tolerance develops, it takes progressively larger doses to produce this vagotonic effect. The author therefore regards the addict as one who has been accustomed to sustain an artificial vagal preponderance by means of this drug and that symptoms of too rapid withdrawal are due to diminution of the vagal control and to sympathetic overaction, while sudden abstinence ushers in a "series of sympathetic explosions which may even endanger life." The author believes that during a gradual reduction treatment one can by the administration of atropine imitate the vagosympathetic relation which the morphine addict requires to be comfortable. The following simplified technic illustrates the principle of the method: Six-tenths mg. of atropine is dissolved in 48 cc. of physiologic solution of sodium chloride together with the full daily supply of the morphine. A dose of 4 cc. is injected every two hours while the patient is awake; but he is not to be aroused when he is asleep. Thus, the more he sleeps the fewer doses he needs and gets. The quantity of morphine actually consumed on the first day becomes the total amount introduced into the mixture for the second day, and so on, until the drug is entirely withdrawn. While the morphine is gradually cut down the atropine is gradually increased until as much as 0.3 mg. of atropine may be included in every dose. The aim is to maintain a slower than normal heart beat. The appearance of ocular symptoms is a sign that atropine is being increased too rapidly. Such a scheme is self regulating and automatic: allowance depends inversely on the length of time the patient sleeps. The author admits that this treatment is unsuited to the debilitated and that segregation, a tactful nurse and a consecrated physician are requisites for success. He reports about two dozen cases illustrative of his method, which is not as simple in its execution as the condensed presentation of principle might lead one to suppose.

Reading, Writing and Speech Problems in Children: A Presentation of Certain Types of Disorders in the Development of the Language Faculty. By Samuel Torrey Orton, M.D. Cloth. Price, $2. Pp. 215, with 24 illustrations. New York: W. W. Norton & Company, Inc., 1937.

This book contains the Thomas W. Salmon Memorial Lectures given at the Academy of Medicine in 1936 by Dr. Samuel Torrey Orton. In these lectures Dr. Orton presents the results of his research and studies in language disorders over a period of more than ten years. In the first chapter certain disturbances of language which follow injury to the brain in the adult are briefly reviewed and attention is called to the arresting fact that these disorders may follow a lesion in one hemisphere of the brain but only if it is the master half of the brain that is injured. The author further points out that our only guide to the master hemisphere in the adult is his laterality, and observations in children are reported which indicate a wide range of variability in establishing a clear cut laterality as measured by tests and history of development of handedness, eyedness and footedness. "In the second chapter five syndromes of delay or disorder in the acquisition of language were described—developmental alexia, special disability in writing, developmental word deafness, motor speech delay, and stuttering —and one other—developmental apraxia—which follows the same unilateral pattern of organization in the brain although it does not always interfere with language development. In all but one of these six disorders, viz., stuttering, it was pointed out that the symptoms observed are a very exact counterpart of those seen in the corresponding syndromes in the adults, suggesting strongly that the determiner for these disabilities in childhood is very closely related physiologically to that which is disturbed by lesions in the critical cortices controlling language in the adult."

The author finds one common factor in all the difficulties listed: that engrams (physiologic records of previous stimuli left in the brain or other nerve centers) exist in the nondominant hemisphere which, if not completely elided, may cause confusion in recognition and recall. There is a clear and suggestive discussion of the treatment of the language difficulties that are listed. Contrary to some of his followers, the author does not feel there is any one single method which can be used in each case nor does he believe that his methods can be standardized. He points out that the emotional factors in every case must be

carefully studied and personality disorders wherever found must be treated. He divides stutterers into two types—those who stutter from the time they first begin to talk and those whose speech is normal until the sixth to the eighth year. He says that in the younger group it is exceedingly important to determine whether a shift of handedness away from the natural inclination has taken place or is under way. Motor tests as well as careful inquiry into the history is essential here. It is well to emphasize the author's words about stuttering, given in chapter 5. He says, with regard to the frequently heard statement that all stutterers should have been left-handed and ought to be so trained, that this rests on a superficial comprehension of the complexities of the problem of cerebral dominance and of the potential sources of difficulty. It is frequently difficult to decide which hand should be used in writing. The book is clearly and interestingly written. The author is careful in drawing his conclusions and modest in his assumptions. It is unfortunate, however, that the book has no index.

This book is a milestone in the study of speech disorders, and no one who works in this field can afford to be without these stimulating and interesting lectures.

Laboratory Outline in Filterable Viruses. By Roscoe R. Hyde, Professor of Immunology and Director of the Laboratories of Immunology and Filterable Viruses, School of Hygiene and Public Health, The Johns Hopkins University. With the assistance of Raymond E. Gardner, Associate in Immunology. Cloth. Price, $1.50. Pp. 85, with 3 illustrations. New York: Macmillan Company, 1937.

In their small volume the authors have presented brief directions "planned to give the student a first-hand knowledge of the nature and behavior of a number of representative viruses" and "a more comprehensive experience with the pathology of a selected group of virus diseases ranging from necrosis to hyperplasia." The text has been evolved from laboratory notes used for a number of years in the teaching of courses at the School of Hygiene and Public Health at the Johns Hopkins University, where the late Charles E. Simon established the first university department of filtrable viruses in the United States. The exercises are designed as an introduction to the study of the filtrable viruses. In preparing them, the choice of viruses and methods has been governed by questions of suitability for class use. They are planned with the idea that the work can be completed within the time allocated for the laboratory period. The directions are stated briefly. It follows that the student will require frequent consultation with an instructor to supply technical details. To make intelligent use of the exercises, the student must have been well grounded in general science and must have received adequate training in bacteriology, immunology and pathology. Thus the volume will be most serviceable to the teacher confronted with the problem of giving a small number of well prepared students a practical introduction to the filtrable viruses. For the more advanced student and the research worker the volume will not be very helpful. A number of technical methods are described, including filtration, the preparation and use of collodion membranes, electrophoresis, tissue culture and the making and staining of histologic preparations. The descriptions of these methods have been gathered from many sources for the convenience of the student. The viruses selected for study exemplify a number of types. They include the viruses of bacteriophagy, tobacco mosaic, lymphocystic disease of fish, vaccinia and variola, fowlpox, herpes, rabies, Rous sarcoma, poliomyelitis and yellow fever. Selected references are given with a view to guiding the student to suitable reading material for use in connection with the laboratory work. This selection is rather arbitrary and inadequate.

Bolezni ukha, nosa i gorla: Rukovodstvo dlya vrachey. Pod redaktsiey S. M. Kompaneytsa. V trekh tomakh. Tom pervy: Bolezni ukha. Pod redaktsiey S. M. Kompaneytsa i A. A. Skrypta. Chast pervaya. [Diseases of Ear, Nose and Throat: Handbook for Physicians. Volume I: Diseases of Ear. Part 1.] Cloth. Price, 18 rubles. Pp. 638, with illustrations. Kiev: Gosudarstvennoe Meditsinskoe Izdatelstvo, 1936.

This is the first half of volume I. It is intended as a guide for otorhinolaryngologists and not as a textbook for students. The contributions are from Soviet specialists. The volume contains an extensive contribution by A. M. Puchkovskiy dealing with the history of the development of otorhinolaryngology in former Russia and in the Union of Socialist Soviet Republics. This is followed by chapters on the anatomy, comparative anatomy, histology, physiology and pathology of the ear, otoneurology, the technic of physiologic experiments on the ear, and on the methods of investigation of the organ of hearing. All the chapters are adequately treated. The illustrations, while lacking artistic appearance, are well selected and valuable when considered from the scientific point of view. Particularly valuable is the chapter on the relation of otology to neurology.

The Facial Neuralgias. By Wilfred Harris, M.D., F.R.C.P., Consulting Physician to St. Mary's Hospital, London. Cloth. Price, $2.75. Pp. 109, with 15 illustrations. New York & London: Oxford University Press, 1937.

This excellent treatise is another masterpiece by Wilfred Harris, the author who contributed the textbook of neuritis and neuralgia to the medical profession. The present work is a detailed compend attempting a classification and differential diagnosis of the many and baffling types of facial pain. Its contents include dental neuralgia, neuralgia from ocular causes, trigeminal tic, migrainous neuralgia, physiology of sensory conduction from the face, sympathetic sensory conduction, traumatic neuritis of the trigeminal and its branches, post herpetic trigeminal neuralgia, tumors of facial bones, nasopharynx or base of the skull, medullary sclerosis, geniculate neuralgia, facial psychalgia, headache and facial neuralgia in sinusitis, chronic neuralgia of the jaws, temple, side of head and neck, and glossopharyngeal tic. The proved and the theoretical data are amply discussed. The author also has placed at the disposal of the readers his knowledge and experience gained in the treatment of trigeminal tic during the past twenty-eight years. There is an excellent bibliography. This book is the best treatise on facial neuralgias in medical literature today.

William Withering: The Introduction of Digitalis into Medical Practice. By Louis H. Roddis, M.D., Commander, Medical Corps, United States Navy. Reprinted, with additions and corrections, from Annals of Medical History (New Series, Vol. VIII, Nos. 2 and 3, March and May, 1936). Cloth. Price, $1.50. Pp. 131, with 8 illustrations. New York: Paul B. Hoeber, Inc., 1936.

This volume is uniform with some of the previously published monographs on great pathfinders in medical practice published by the Hoeber press. It is apparently the first formal biography in book form of William Withering, whose contribution to cardiology is everywhere recognized as epoch making. Withering was much interested in botany, mineralogy and other scientific subjects. He developed a considerable consultation practice. He first used foxglove in 1775. The manner in which it was first called to his attention is interesting. He says:

> In the year 1775 my opinion was asked concerning a family recipe for the cure of dropsy. I was told that it had long been kept a secret by an old woman in Shropshire who had sometimes made cures after the more regular practitioners had failed. I was informed also that the effects produced were violent vomiting and purging; for the diuretic effects seemed to have been overlooked. This medicine was composed of twenty or more different herbs; but it was not very difficult for one conversant in these subjects to perceive that the active herb could be no other than foxglove.

The book makes an interesting biographic story out of the life of a great physician. It is beautifully illustrated and has a fine bibliography.

Senile Cataract: Methods of Operating. By W. A. Fisher, M.D., F.A.C.S., Professor of Ophthalmology, Chicago Eye, Ear, Nose and Throat College. Third edition. Fabrikoid. Price, $2. Pp. 153, with 183 illustrations. Chicago: H. G. Adair Printing Company, 1937.

Ophthalmoscopy, Retinoscopy and Refraction, with New Chapter on Orthoptics. By W. A. Fisher, M.D., F.A.C.S., Professor of Ophthalmology, Chicago Eye, Ear, Nose and Throat College. Fourth edition. Fabrikoid. Price, $2. Pp. 210 with 240 illustrations. Chicago: H. G. Adair Printing Company, 1937.

The book on cataract contains brief chapters by Fuchs (now dead), Wright, Barraquer, Holland and van Lint. On the whole the illustrations are poor except for the charming picture of two kittens, which furnish "ample, inexpensive and satisfactory material for practice." The appearance of the book is attractive. The material presented is too complex for the medical student, insufficient for the beginning ophthalmologist, and inadequate for the experienced ophthalmic surgeon.

The second book has a new chapter on orthoptics but retains the same old Cleveland fundus plates, which are perfectly unintelligible. Retinoscopy, refraction, ophthalmoscopy and orthoptics are discussed at wholly inadequate length.

Heart Disease. By Paul Dudley White, M.D., Lecturer in Medicine, Harvard Medical School. Second edition. Cloth. Price, $7.50. Pp. 744, with 125 illustrations. New York: Macmillan Company, 1937.

The second edition of this deservingly popular book is a vast improvement over the first. The book has been entirely revised and many better illustrations have been provided. The extensive bibliography of the first edition has been abbreviated and brought down to date. Its utility has been greatly enhanced by placing the references at the end of each chapter instead of, as before, at the end of the book. Otherwise, the same plan has been employed as in the first edition, but the first section dealing with the cardiovascular examination has been considerably reduced. It is regrettable that in this reduction the chapter on symptoms seems to have been greatly shortened. The same saving in space could more suitably have been obtained if the chapter on auscultation had been reduced and some of the polygraph and apex beat tracings in the chapter on pulsations had been omitted. Considerable reduction in size could also have been obtained by reducing the repetitions, not all of which can be ascribed to the scheme of the presentation. It is unfortunate that the recent developments in the field of peripheral vascular disease were not given more consideration. The author has added two new appendixes; the first is the classification of cardiac diagnoses approved by the American Heart Association with some of the author's criticisms, and the second is a chronological summary of the major contributions to our knowledge in the cardiovascular field. It would have been better if the last twenty-five years of this historical summary had been omitted from this survey, since it is obvious that historical judgment improves with lapse of time. These comments do not detract from the excellence of this book, which represents not only the personal experience of the author over many years in the practice of cardiology both among private and among service patients, but also the points of view that have developed in the field in the last quarter century. The medical student and general practitioner will find the book easy to digest and full of practical and useful data. The specialist will find a considered, mature assay of the developments in this field dealt with from the clinical view. This book will take its rightful place among the classics in the field of cardiology.

Operative Surgery. By Alexander Miles, M.D., LL.D., F.R.C.S., Consulting Surgeon, Royal Infirmary, Edinburgh, and D. P. D. Wilkie, M.D., F.R.C.S., Professor of Surgery, University of Edinburgh. Second edition. Cloth. Price, 21s. Pp. 631, with 329 illustrations. New York & London: Oxford University Press, 1936.

In this edition the text has been completely revised; a number of old illustrations have been withdrawn and a greater number of new ones added. As the authors justly state, the scope of operative surgery has become so wide and the technic so complicated that it is impossible to deal with the whole subject adequately in a single volume of moderate proportions. The work is offered to undergraduates and resident surgeons as a description of the present-day practice in the Edinburgh school; the alternative methods have been discussed only in general outlines. From the purely theoretical point of view, it is beyond doubt that a medical student should be familiar with ligation of the common carotid or the iliac artery; however, when sixty-three pages is devoted to blood vessel surgery the question arises whether it is not wiser to allot less space to the description of such rare procedures and devote more to common operations. The compilative, concise yet comprehensive work is profusely illustrated; for the Edinburgh student the book fulfils a distinct need; for the American surgeon it will be of interest as it furnishes information as to methods popular in this prominent medical school.

Pediatric Nursing. By John Zahorsky, A.B., M.D., F.A.C.P., Professor of Pediatrics and Director of the Department of Pediatrics, St. Louis University School of Medicine. Assisted by Beryl E. Hamilton, R.N., Graduate of St. Luke's Hospital, St. Louis. Cloth. Price, $3. Pp. 568, with 151 illustrations. St. Louis: C. V. Mosby Company, 1936.

Pediatrics has progressed as rapidly as any phase of medicine; consequently, pediatric nursing has also needed modification and study. The prevention of diseases has been increasingly emphasized, and proper nutrition to provide for normal growth has become one of the primary objects of child care. Almost daily, new technical procedures on the care of the sick infant are presented. This book was written to supply the need for material describing the latest methods used in pediatric nursing. The first section of the book is devoted to the science of pediatrics; the second, to the technical methods of procedure. Profuse illustrations, although not always clear, may aid the nurse in understanding the methods described. While actual practice in a hospital is needed in the training of nurses, the use of a suitable textbook, such as this one, will aid greatly.

Atlas gisteroskopii v akusherstve. [By] B. I. Litvak. Pod redaktsiey Prof. G. F. Pisemskogo. Atlas de l'hystéroscopie dans l'obstérique. Cloth. Price, 27 rubles, 50 kopecks. Pp. 151, with 50 illustrations. Kiev: Gosmedizdat U. S. S. R., 1936.

The author discusses the diagnostic value, the construction of the instrument and the technic of endoscopy of the uterus with the aid of the Miculicz-Radecki-Freund hysteroscope. The method enables the observer to recognize the various inflammatory and edematous states of the uterine mucosa, fetal remains and localization of the placenta. The author studied epithelization of the uterine cavity after artificial abortion and after normal labor. The results of the investigation are presented in fifty drawings. The author believes that endoscopy of the uterine cavity is a valuable aid in gynecologic and obstetric diagnosis and that it deserves further development.

The Nursery Years. By Susan Isaacs, M.A., D.Sc. Reprinted, 1936. Cloth. Price, $1.50. Pp. 138, with one illustration. New York: Vanguard Press, 1936.

This guide book was originally published in April 1929. It describes the mental development of the infant until the age of 6 and includes chapters on the norms of development, some answers to problems, and playthings. On one page the author epitomizes fifteen important don'ts for parents. References are classified describing the general facts of development therapy and practice in education and biology. The language is simple and the material authoritative. This little volume lends itself well as an elementary textbook for child study groups and can be recommended for teachers and pediatricians interested in child development.

Textbook of Medicine. By Various Authors. Edited by J. J. Conybeare, M.C., M.D., F.R.C.P., Physician to Guy's Hospital, London. Third edition. Fabrikoid. Price, $7. Pp. 1,027, with 49 illustrations. Baltimore: William Wood & Co., 1936.

The object of this book is to provide to the student and practitioner the essentials of medicine within as small a compass and at as low a price as possible. In the present edition the subject matter has been revised, in many places rewritten, and several additional contributors have been added. The sections on renal diseases, anemia, diabetes mellitus and the pituitary gland have been completely rewritten. A new article on coronary occlusion has been included. The material on arthritis has been rewritten to conform with the modern outlook toward this disease. Many prescriptions have been added, which increase the value of the book for the practitioner. The author has accomplished in a large measure his purpose of including a large amount of material in a book of not excessive size.

Economic Problems of Modern Life. By S. Howard Patterson, A.M., Ph.D., Professor of Economics, Wharton School of Finance and Commerce, University of Pennsylvania, and Karl W. H. Scholz, A.M., Ph.D., Professor of Economics, Wharton School of Finance and Commerce, University of Pennsylvania. Third edition. Cloth. Price, $4. Pp. 813, with 35 illustrations. New York & London: McGraw-Hill Book Company, Inc., 1937.

The previous editions of this work were published in 1927 and in 1931. It is a first class textbook on economics, concerning itself with the organization of business exchange, public and private finance, capitalistic organization, labor problems and security. The final section is devoted to world problems of economic reorganization. The whole subject of public health is discussed under the heading of "Economic Insecurity and Social Insurance." Here the authors advocate some sort of sickness insurance for all workers.

Naris klinichnoĭ fermentologiĭ [By] I. V. Bazilevich. [Outline of Clinical Fermentology.] Paper. Price, 9 rubles 6 kopecks. Pp. 312. Kiev: Vidavnitstvo Akademiĭ Nauk U. S. R. R., 1936.

This book, written in the Ukrainian, deals with the various ferments of the human body, the various tests for their recognition, their chemistry and their clinical significance.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Malpractice: Liability of Physician for Negligence of Hospital Nurse.—The plaintiff was suffering from a small dermoid cyst in the pelvic region and entered the Church of St. Matthew Mills Memorial Hospital to have it removed by a Dr. Prindle. The physician requested a nurse in charge of the operating room to prepare for a minor operation, informing her that he would use as a local anesthetic a 1 per cent solution of procaine. Through mistake, the nurse prepared a solution of formaldehyde which the physician, believing it to be procaine, started to inject into the plaintiff in the immediate vicinity of the cyst. The patient immediately gave evidence of suffering great pain and the physician, discovering the mistake, injected procaine and completed the operation by removing the cyst after excising the area affected by the formaldehyde. Thereafter the plaintiff sued the physician, the hospital and the nurse. In the first trial of the case, the trial court gave judgment for the defendants but the Supreme Court of California remanded the case for a retrial. *Hallinan* v. *Prindle* (Calif.), 29 P. (2d) 202; abstr. THE JOURNAL, Oct. 13, 1934, p. 1178. In the second trial the trial court gave judgment against the hospital and the nurse for the sum of $12,500 and exonerated the physician from liability. The hospital, the nurse and the plaintiff appealed to the district court of appeal, first district, division 1, California.

The court could find nothing in the evidence to support the plaintiff's contention that the nurse, in preparing the tray for the operation, was the servant or employee or even the agent of the physician. While, said the court, if the physician were performing such an operation at the home of the patient, or in his office, without assistance, these preparations would necessarily devolve on him, there is nothing in their nature which renders it improper or even undesirable that they be undertaken by another person, qualified by training and experience, acting in cooperation with the physician. The nurse in performing her duties in the operating room is acting for her employer, the hospital, and not for the operating surgeon, and the latter cannot be held responsible for her negligent acts unless performed under conditions in which, in the exercise of ordinary care, he could have or should have been able to prevent their injurious effects and did not. The general rule is thus laid down in 48 Corpus Juris, sec. 144, p. 1137: "A physician is not liable for the negligence of hospital or other nurses, attendants or internes who are not his employees if he has no knowledge thereof, or has no connection therewith, or if it is not discoverable by him in the exercise of ordinary care, or unless he is negligent in permitting them to attend the patient." It was plain from the evidence, the court continued, that the acts of preparation performed by the nurse were not done under the special supervision and control of the physician. On the contrary, they were performed by her in his absence. That they were done at his request or direction has no significance, since she was merely attending to duties devolving on her as an employee of the hospital. Whether performed by her at the direction of an officer of the hospital made in pursuance of a previous notification by the physician or on the request of the physician made directly to her cannot affect the legal situation.

The trial court committed no error in admitting evidence of the custom of physicians and surgeons of good standing to accept instruments, medicines and drugs from a graduate trained nurse without making an examination thereof themselves. The jury was called on to decide whether the physician was chargeable with negligence in injecting into the body of the patient the liquid placed by the nurse in the medicine glass. The test of such negligence is whether or not an ordinarily prudent person would have acted as the physician did. Although jurors are presumed to know what an ordinarily prudent person would do under any and all circumstances, it is of assistance to them to be informed what the practice is of persons habitually called on to perform a given act, for it is obvious that such a practice is most likely to be that which is suggested by ordinary prudence. While a negligent act, clearly shown to be such, cannot be justified on the ground of custom or usage, and evidence of such custom or usage is not generally admissible for that purpose, evidence that a person charged with negligence followed the custom of other persons in the same line of business will be received on the question as to whether he acted as a reasonably prudent man would have acted under the circumstances. The trial court committed no error in exonerating the physician.

With respect to the hospital, the court said, the evidence was clear that it was a nonprofit organization devoted to the care of the sick either without payment or at a charge which was less than the cost of such care. The hospital, being a charitable institution, was not liable for the negligence of the nurse, no lack of care having been shown in her selection and retention. The trial court erred, in the opinion of the district court of appeal, in allowing the verdict against the hospital to stand. With respect to the nurse, the court said, it could hardly be contended that she was not guilty of negligence. On the former appeal in this case, the Supreme Court held that the evidence conclusively established such negligence. The nurse accounted for her mistake by frankly admitting that she took no pains to read the label on the formaldehyde bottle before pouring part of its contents into the medicine glass. The court thought, however, that the amount of the judgment against the nurse was excessive by $5,000.

For the reasons stated, the judgment in favor of the physician was affirmed, the judgment against the hospital was reversed and the judgment against the nurse was affirmed, subject to a reduction of $5,000 if agreed to by the plaintiff.—*Hallinan v. Prindle (Calif.), 62 P. (2d) 1075.*

Medical Practice Acts: Defective Charges in Revocation Proceedings.—The Florida state board of medical examiners instituted proceedings to revoke Sbordy's license to practice medicine, charging that he "was guilty of fraud in the practice of medicine, or fraud or deceit in his admission to the practice of medicine." To substantiate this charge it was alleged that (1) he held a certificate of the board of eclectic medical examiners, dated April 6, 1915, "which said certificate is fraudulent and improper which fact is and has been well known" to him, and (2) he was not "a graduate of a legally incorporated medical college maintaining a standard satisfactory to the State Board of Medical Examiners of Florida." Prior to a hearing, Sbordy applied to the Supreme Court of Florida for a writ of prohibition to prevent the board from proceeding further.

The board questioned whether or not the desired remedy by prohibition was proper. The Supreme Court held that it was proper if the board was acting without jurisdiction or if it was exceeding its jurisdiction in not proceeding in accordance with the essential requirements of law. The court concluded that the board was exceeding its jurisdiction because the complaint on which the revocation proceedings were based did not sufficiently charge Sbordy with the commission of any act which constituted a ground for the revocation of his license to practice medicine. Charges before licensing boards, said the Supreme Court, need not be stated with the technical nicety or formal exactness required of pleadings in the courts, yet the accused must be informed with reasonable certainty of the nature of the accusation against him and must be given reasonable opportunity to defend against the attempted proof of such charges. Proceedings in matters of this kind are summary in their nature but are not arbitrary or despotic, and the charges preferred must be specific.

The first charge, which accused Sbordy of being guilty of fraud in the practice of medicine, or fraud or deceit in his admission to the practice of medicine, because he held a certificate "which said certificate is fraudulent and improper which fact is and has been well known" to him, obviously failed to charge him in such fashion as to inform him, with reasonable certainty, of the nature and cause of the accusation against him. In what manner he had been guilty of fraud and why it was that the certificate granted him was fraudulent and improper did not appear from this charge. It failed to accuse him of being guilty of any acts which constituted grounds for the revocation of his license. The second charge against Sbordy failed also to state with reasonable certainty wherein

he was guilty of any fraud in his admission to practice, except that he was charged with not being a graduate of a legally incorporated medical college maintaining a standard satisfactory to the state board of medical examiners. But, said the court, the provisions of the act under which he obtained his license to practice as an eclectic required him to have only a certificate of graduation showing that he had taken not less than a two years course from some college of the eclectic school of medicine. The second charge, therefore, failed legally to charge the commission of any acts which constituted grounds for the revocation of Sbordy's license.

A permanent writ of prohibition was issued, restraining the board of medical examiners from proceeding with the revocation matter.—*State ex rel. Sbordy v. Rowlett (Fla.), 170 So. 311.*

Optometry Practice Acts: Corporate Practice of Optometry in Missouri.—A corporation operated a number of department stores in Missouri and leased to an optical company space for operation of optical departments in such stores. The company agreed to place graduate optometrists in charge of such optical departments, who were to be subject to all the rules and regulations of the corporation. Receipts from the operation of such optical departments were payable to the corporation, which after deducting 25 per cent of such receipts returned them to the optical company. The optical company furnished all the equipment, supplies and merchandise necessary for the conduct of the optical business, but all the advertising of such departments was in the name of the corporation. The attorney general of Missouri brought quo warranto proceedings, alleging that the corporation and the company were engaged in the practice of optometry without a license. The Supreme Court of Missouri, however, held that the defendants were not engaged unlawfully in the practice of optometry within the meaning of the optometry practice act and dismissed the proceedings.—*State ex inf. McKittrick v. Gate City Optical Co. (Mo.), 97 S. W. (2d) 89.*

Malpractice: Inflammation of Bone Following Fracture.—On February 11 the plaintiff, a young woman, suffered a comminuted fracture of the tibia of her right leg about 5 inches below the knee joint. She was taken to a clinic operated by the defendants, where, after roentgenograms of the injured leg had been studied, the fracture was reduced and a plaster-of-paris cast applied extending from above the knee to below the ankle. During the next fifteen days the plaintiff complained of pain in her leg and on several occasions the defendants opened the cast to relieve the pressure. Another roentgenogram, taken February 26, disclosed a slight overlapping of the bone. The plaintiff was hospitalized and a so-called "Brown splint" was applied. On March 16 the bones were found to be in apposition and another plaster-of-paris cast was put on the injured leg. The plaintiff continued to complain of pain in her leg and the defendants advised her to have diathermy treatments, which she did. Finally, the plaintiff consulted another physician, who took another roentgenogram. From this and her history of the case, he "inferred" that the pain with which she was suffering probably involved some inflammatory bone process and suggested that she consult a specialist in that field. This she did and a biopsy indicated that there was a chronic inflammation of the bone. No infection was found. Thereafter the plaintiff sued the defendants, claiming that they negligently failed to discover that she, while under their care, was suffering from inflammation of the bone. In the trial court the jury rendered a verdict for the plaintiff, and the defendants appealed to the Supreme Court of Minnesota.

The specialist testified that the inflammatory process in and about the injured bone was not caused by anything done or omitted to be done by the defendants. From his examination of the plaintiff and her history, he concluded that the case had been a complicated one, largely because of the fact that the plaintiff, in childhood, had infantile paralysis, which left her right leg somewhat crippled. The record, said the Supreme Court, was barren of expert testimony placing any blame on the defendants. Neither of the plaintiff's expert witnesses ventured any opinion as to when the inflammation, other than such as naturally and necessarily resulted from the fracture, commenced or as to what caused it. Obviously, the court said, this was a case wherein the testimony of competent medical experts was necessary to establish liability. There must be proof of causal connection between the wrong complained of and the resulting injury. The burden of proving such negligent conduct rested on the plaintiff, and she failed to meet this burden. The trial court was directed, therefore, to enter judgment for the defendants notwithstanding the verdict.—*Williamson v. Andrews (Minn.), 270 N. W. 6.*

Health Insurance: "Permanent and Total Disability" Construed.—The insured under a policy of health insurance brought suit against the defendant insurance company to recover certain benefits which the company promised to pay if the insured became permanently and totally disabled. From a judgment in favor of the insured, the insurance company appealed to the Court of Appeals of Kentucky.

The Court of Appeals was unable to agree with the insurance company's contention that the evidence relative to total and permanent disability had not warranted the submission of the case to the jury. The mere fact that the insured had occasionally done light work about his farm, had looked after his saw mill and had worked five days through a series of years in laying a pipe line was not conclusive on the question of permanent and total disability. The court pointed out that two physicians testified that he had tuberculosis and was unable to work, as manual work of any kind would be dangerous to his health and life. It was shown by the evidence that whenever he did work he expectorated blood and was confined to bed thereafter. Even the medical witness for the insurance company, continued the court, went no further than to state that the insured could do only light work. The court therefore held that it was proper for the lower court to submit the question of permanent and total disability to the jury.

The Court of Appeals, however, reversed the judgment in favor of the insured and remanded the case for a new trial because, among other things, the lower court in instructing the jury had submitted only the question of total disability and had neglected to charge that in order for the insured to recover he must also prove permanent disability.—*Prudential Ins. Co. of America v. Johnson (Ky.), 97 S. W. (2d) 793.*

Compensation of Physicians: Liability of Father for Services Rendered to Minor Child.—The defendant's minor son fractured his arm in a high school basketball game and was sent by the coach to the physician-plaintiff for medical attention. On the father's refusal to pay for the services rendered, the physician sued. From a judgment in favor of the physician, the defendant appealed to the court of appeals of Alabama.

A father, said the court of appeals, is under obligation, natural, moral and legal, to furnish necessaries for his infant child. The term "necessaries," in this connection, contemplates and includes many things, and what are necessaries is a mixed question of fact and law to be determined by the jury on the particular facts of each case. The court concluded that medical care is and always has been included among necessaries and, when needed, medical care is a proper subject of recovery in a civil action. Accordingly, the court of appeals affirmed the judgment in favor of the physician.—*Osborn v. Weatherford (Ala.), 170 So. 95.*

Society Proceedings

COMING MEETINGS

American Hospital Association, Atlantic City, N. J., Sept. 13-18. Dr. Bert W. Caldwell, 18 East Division St., Chicago, Executive Secretary.
American Roentgen Ray Society, Chicago, Sept. 13-17. Dr. Eugene P. Pendergrass, 3400 Spruce St., Philadelphia, Secretary.
Idaho State Medical Association, Boise, Aug. 30-Sept. 3. Dr. Harold W. Stone, 105 North Eighth St., Boise, Secretary.
Kentucky State Medical Association, Berea, Sept. 6-9. Dr. A. T. McCormack, 532 West Main St., Louisville, Secretary.
National Medical Association, St. Louis, Aug. 15-20. Dr. John T. Givens, 1108 Church St., Norfolk, Va., General Secretary.
Northern Minnesota Medical Association, Virginia, Aug. 27-28. Dr. J. F. Norman, Crookston, Secretary.
Radiological Society of North America, Chicago, Sept. 13-17. Dr. Donald S. Childs, 607 Medical Arts Building, Syracuse, N. Y., Secretary.
Utah State Medical Association, Salt Lake City, Sept. 2-4. Dr. F. M. McHugh, 17 Exchange Place, Salt Lake City, Secretary.
Wisconsin, State Medical Society of, Milwaukee, Sept. 14-17. Mr. J. G. Crownhart, 119 East Washington Ave., Madison, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers in continental United States and Canada for a period of three days. Periodicals are available from 1926 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Cancer, New York

30: 1-218 (May) 1937

*The Astrocytomas. B. J. Alpers, Philadelphia, and S. N. Rowe, Pittsburgh.—p. 1.
Melanoblastosis and Melanoblastoma: Primary and Secondary Involvement of the Brain: Anatomic Study. M. M. Kessler, New York.—p. 19.
Effect of Radiation on Reticulum in Squamous Cell Carcinoma of Uterine Cervix. Zola K. Cooper and M. G. Seelig, St. Louis.—p. 32.
Intrinsic Factors in Etiology of Neoplasms. C. V. Weller, Ann Arbor, Mich.—p. 39.
Sex Hormones and Their Relation to Tumors. L. Loeb, E. L. Burns, V. Suntzeff and Marian Moskop, St. Louis.—p. 47.
Effects of Certain Diets on Production of Tar Carcinoma in Mice. A. T. Cameron and Sara Meltzer, Winnipeg, Manit.—p. 55.
Production of Skin Carcinoma in White Rat by Ordinary Gas-Works Tar. A. T. Cameron and Sara Meltzer, Winnipeg, Manit.—p. 70.
*Transmissible Leukemia in Mice with Atypical Cells. W. A. Barnes and J. Furth, New York.—p. 75.
Myeloid Infiltrations Occurring in Adrenals of Animals Bearing Certain Tumors. Margaret Reed Lewis, Baltimore.—p. 95.
Primary Hemangio-Endothelioma of the Heart: Report of Case. P. Gross and C. E. Englehart, Pittsburgh.—p. 102.
Squamous-Cell Epithelioma of Left Fourth Finger: Case Report. H. Sigel, New York.—p. 108.
Intra-Abdominal Fibroma in a Brown Trout. L. Kreyberg, Oslo, Norway.—p. 112.
Neoplasm Studies: III. Organization of Cells of Human Tumors in Tissue Culture. Gladys Cameron and R. Chambers, New York.—p. 115.
Effect of Single and Divided Doses of High Intensity X-Rays on Eggs of Drosophila. C. Packard, New York.—p. 130.

The Astrocytomas.—Alpers and Rowe analyzed a large group of astrocytomas in an effort to classify them histologically and to correlate their histologic with their clinical features. The division of the astrocytomas into fibrillary (solid and cystic) giant cell and cellular groups indicates the great preponderance of the fibrillary group and makes possible in the majority of instances a safe prediction of the course which the tumor will take. In general, tumors of the fibrillary and cystic groups grow slowly and have correspondingly slow clinical courses. The piloid group of fibrillary astrocytomas, while very benign histologically, seems to be less benign in clinical features. Tumors of the giant cell and cellular groups grow more rapidly and correspondingly follow a more rapid clinical course than the fibrillary astrocytomas. Most of the fibrillary astrocytomas are represented by the diffuse, interlacing neuroglial carpet, which simulates the neuroglial arrangement in the normal white matter. The reason for the difference in appearance of these slowly growing tumors must remain at present a matter of speculation. Granting that the preponderance of fibrils in fibrillary astrocytomas is due entirely to their formation by the cells, it is still not evident what the stimulus is for their heavy deposit in some tumors as compared with others, or why some fibrillary astrocytomas develop as diffuse types and others as piloid types, all of them being the result presumably of the same cell, the fibrillary astrocyte. In all the fibrillary tumors it is possible to find protoplasmic types of astrocytes as well as immature forms. The cellular form of astrocytoma is in reality the protoplasmic type, but even in these tumors there is some fibrillar formation. Since it is not clear whether the lack of fibrils is due to the presence of protoplasmic astrocytes or to immature cells, it is deemed best to refer to these tumors as cellular astrocytomas. Similarly there is little doubt that the giant cell astrocytomas constitute a group in themselves. In appearance and structure they are quite different from the other groups.

Transmissible Leukemia in Mice with Atypical Cells.—Barnes and Furth describe a transmissible strain of leukemia in mice, the malignant cells of which are not typically lymphoid, myeloid or monocytic in type. The cells are not phagocytic but form giant cells similar to megakaryocytes and the giant cells of Hodgkin's disease. Transmission of leukemia is accomplished with material containing living cells but fails with cell-free material. The length of life after inoculation is in inverse relation to the number of leukemic cells injected. The disease is readily transmitted to mice of the stock in which this leukemia originated. Unrelated mice may be rendered susceptible to this disease by massive repeated doses of x-rays, but not by a single irradiation. Leukemic tumor tissue slowly frozen to —70 C. transmits the disease, while that rapidly frozen to —30 C. is entirely inactive. Slowly frozen leukemic tissue kept at —70 C. during thirty-two days produces the disease as readily as that kept at this temperature for thirty minutes. These studies indicate that successful inoculations with frozen material are due to a few cells that have escaped destruction.

American Journal of Pathology, Boston

13: 325-496 (May) 1937

Effect of Parathyroid Extract and Calciferol on Tissues of Nephrectomized Rat. F. A. McJunkin, W. R. Tweedy and E. W. McNamara, Chicago.—p. 325.
Phagocytic Activity of Circulating Cells in Various Types of Leukemia. M. M. Strumia, Bryn Mawr, Pa., and F. Boerner, Philadelphia.—p. 335.
The Paneth Cell. A. J. Hertzog, Minneapolis.—p. 351.
Cultivation of Virus of St. Louis Encephalitis. R. W. Harrison and Elizabeth Moore, St. Louis.—p. 361.
*Fibrosis of Bone Marrow (Myelofibrosis) Associated with Leukemoid Blood Picture: Report of Two Cases. S. R. Mettier and G. Y. Rusk, San Francisco.—p. 377.
*Aortic Commissural Lesion in Rheumatic Fever. L. Gross and Gertrude Silverman, New York.—p. 389.
Mineral Content of Various Cerebral Lesions as Demonstrated by Micro-Incineration Method. L. Alexander and A. Myerson, with technical collaboration of D. E. Goldman, Boston.—p. 405.
Studies on Experimental Infection of Some Reptiles, Amphibia and Fish with Serratia Anolium. H. J. Clausen and F. Duran-Reynals, New York.—p. 441.
Structure of Small Cerebral Arteries and Their Changes with Age. A. B. Baker, Minneapolis.—p. 453.
Histopathology of Idiopathic Thrombocytopenic Purpura Haemorrhagica. D. A. Nickerson and D. A. Sunderland, Boston.—p. 463.
New Method for Rapid Staining of Myelin Sheaths. W. K. Smith and B. Quigley, Rochester, N. Y.—p. 491.

Fibrosis of Bone Marrow Associated with Leukemoid Blood Picture.—Mettier and Rusk cite two cases presenting leukemoid blood pictures and fibrosis of the bone marrow. The clinical observations in the two cases reported are similar only in the qualitative aspects of the so-called leukemoid blood pictures. The illness of the first patient was characterized by a hemorrhagic tendency, thrombocytopenia and severe anemia. Enlargement of the spleen occurred late in the course of illness. At the outset a leukopenia occurred and immature forms of leukocytes were found in the blood smear. Prior to death a leukocytosis developed, and concomitantly there was a definite increase in the number of immature leukocytes. The second patient showed the classic signs of myelogenous leukemia when first seeking medical aid. There was splenomegaly and leukocytosis, and myelocytes were present in the blood film. As the course of illness approached termination, myeloblasts appeared in the blood and the patient developed in addition a severe anemia. On postmortem examination the two cases presented a striking similarity in the structural changes of the long bones. The medullary cavities showed increased fibrosis and a few spicules of cancellous bone, which partially obliterated the hematopoietic tissue. A careful study of the sinusoids of the liver and spleen in the two cases failed to reveal any erythrogenic foci. In the first case the blood picture was compatible with a diagnosis of aleukemic myelosis, whereas in the second case the changes were those typical of myeloid leukemia.

Aortic Commissural Lesion in Rheumatic Fever.—Gross and Silverman base their discussion on a study of seventy rheumatic hearts, together with fifty normal hearts. The rheumatic material was segregated into six groups representing the various clinical courses that the rheumatic process may take. A number of inflammatory changes are found in the aortic root, wedge, annulus, ring, subaortic angle and pericardial mantle which are characteristic of rheumatic fever and, to some extent, reflect the clinical course of the disease. Even when healing takes place the histologic characteristics of the

commissural lesion afford additional stigmas, which are of value in discerning a past rheumatic process. From a discussion of the pathogenesis of this lesion it appears that, even though the original infection may reach the aortic ring through several routes, in most instances the inflammatory granulation tissue passes from the pericardial mantle through the aortic root, wedge and annulus to reach the aortic rings. The latter show a much more flagrant inflammatory process, which spreads into the valve leaflets and, probably with the additional factor of trauma caused by the systolic and diastolic movements of the cusps, eventually leads to their agglutination.

American Journal of Tropical Medicine, Baltimore

17: 313-456 (May) 1937

Epidemic of Jungle Yellow Fever on Planalto of Matto Grosso, Brazil. A. W. Burke, Entebbe, Uganda, Africa.—p. 313.
*Control of Yaws by an Intensive Treatment Method. G. M. Saunders, Kingston, Jamaica, British West Indies.—p. 335.
Diendamoeba Fragilis: Some Further Observations. E. G. Hakansson, Panama, Republic of Panama.—p. 349.
Investigation of Intestinal Parasitic Infections of Selected Population of Oklahoma City. W. P. N. Canavan and H. M. Hefley, Oklahoma City.—p. 363.
*Incidence of Chagas' Disease in Panama as Determined by Complement Fixation Test. C. M. Johnson and R. A. Kelser, Panama, Republic of Panama.—p. 385.
Natural Host of Trypanosoma (Crithidia) Conorhini Donovan. C. Bonne, Batavia, Java.—p. 393.
Observations on Relationship Between Leukocyte Picture and Crisis in Parasite Number in Experimental Trypanosomiasis. D. F. Gowe, New York.—p. 401.
Experiments in Cultivation of Avian Malaria Parasites. R. D. Manwell and R. I. Hewitt, Syracuse, N. Y.—p. 407.
Survey of Malaria in Egypt. M. A. Barber and J. B. Rice.—p. 413.
Consideration of Duration of Intrinsic Incubation Period in Vivax Malaria in Relation to Certain Factors Affecting Parasites. M. F. Boyd and S. F. Kitchen, Tallahassee, Fla.—p. 437.
Studies on Oxyuriasis: I. Types of Anal Swabs and Scrapers, with Description of Improved Type of Swab. M. C. Hall, Washington, D. C.—p. 445.

Control of Yaws.—Saunders points out that in Jamaica, British West Indies, an effort has been made to reduce the prevalence of yaws in an endemic zone by an intensive treatment method whereby a field unit attempts to locate all infectious or potentially infectious cases and treat them at regular intervals to render them noninfectious. This was accomplished between April 1933 and September 1934 in a territory (under control for three years) 7 by 15 miles in extent comprising nine adjacent areas with a total population of nearly 22,000. To satisfy the requirements necessary for yaws control, a semimobile field unit was organized. This consisted of a medical officer, a clerk, a dispenser and four sanitary inspectors. The program entailed survey and treatment in successively adjacent areas, with follow-up work spaced at more or less regular intervals. When a survey was completed in an area, a temporary clinic was established near the center of the territory. The two inspectors of the treatment team notified all persons who had been found to have lesions of yaws and all who had given a history of the disease within the past five years to report for examination and possible treatment. They checked up on all delinquents and kept the entire area under surveillance for new infections and for relapsing lesions among persons with the disease in latent form. In order to determine the relative effectiveness of neoarsphenamine and bismuth salicylate in the control of yaws, the patients in each area were treated almost entirely with one or the other drug. Preliminary studies showed that six weekly injections of either preparation were sufficient to cause prompt healing of lesions in nearly all cases and to prevent relapses for a period of at least a year in 90 per cent of yaws patients treated with neoarsphenamine and in 70 per cent of those treated with bismuth salicylate, the individual dosage being graded according to body weight. After the original treatment period, each area was visited again for a rapid resurvey at intervals of from four to eight months. An inspector was sent into the district about a month ahead of the treatment team to record the condition of all former patients and to arrange for their attendance at the clinic soon to be reopened. The inspector also visited all homes, searching for persons with new and relapsing yaws lesions, paying particular attention to persons exposed to infected individuals. Both the attack rate and the number of persons with yaws lesions were substantially reduced. Greater success was gained in areas in which patients were treated with neoarsphenamine, but satisfactory results followed the use of bismuth salicylate.

Chagas' Disease and the Complement Fixation Test.—Johnson and Kelser proposed to determine the degree of infection by Trypanosoma cruzi in a representative group of the population and to study further the reliability and usefulness of the complement fixation test. Out of 1,251 serums collected thus far from various places in Panama, thirty-seven were positive to the test and eleven gave suggestive reactions, a combined rate of 3.83 per cent. The infection rate as determined by the test is low for children less than 15 years of age but rises sharply above this age. This may possibly be explained on the basis of a relatively high mortality from the disease in children. This possibility is strengthened by the few clinical observations that have been made in Panama. The complement fixation test is of distinct value not only in identifying active cases of Chagas' disease but in revealing the incidence of the infection, past and present. The survey indicates that the disease and human carriers of the organisms are more common than has been supposed.

Anatomical Record, Philadelphia

68: 1-132 (April) 1937

Normal Stages of Fundulus Heteroclitus. Jane M. Oppenheimer, New Haven, Conn.—p. 1.
Development of Pars Intestinalis of Common Bile Duct in Human Fetus, with Especial Reference to Origin of Ampulla of Vater and Sphincter of Odii: II. Early Development of Musculus Propius. R. A. Schwegler Jr. and E. A. Boyden, Minneapolis.—p. 17.
Studies on Innervation of Reproductive Organs of Macacus Rhesus. L. R. Wharton, Baltimore.—p. 43.
Decrease in Number of Myelinated Fibers in Human Spinal Roots with Age. K. B. Corbin and E. D. Gardner, Palo Alto, Calif.—p. 63.
Utriculo-Endolymphatic Valve and Duct and Its Relation to Endolymphatic and Saccular Ducts in Man and Guinea-Pig. T. H. Bast, Madison, Wis.—p. 75.
Endometrial and Myometrial Changes, Including Fibromyomatous Nodules, Induced in Uterus of Guinea-Pig by Prolonged Administration of Estrogenic Hormone. W. O. Nelson, New Haven, Conn.—p. 99.
Structure of Secreting and Retrogressing Mammary Gland in Guinea-Pig. Cora Hesselberg and L. Loeb, St. Louis.—p. 103.
Histologic Study of Renal Elimination of Ascorbic Acid. A. Giroud and C. P. Leblond, New Haven, Conn.—p. 113.
Speed of Travel of Ram Spermatozoa. R. W. Phillips and F. N. Andrews, Amherst, Mass.—p. 127.

Archives of Ophthalmology, Chicago

17: 967-1168 (June) 1937

Relation of Sympathetic Nervous System to Diseases of Eye, with Regard to Surgical Procedures. J. E. Weeks, New York and Portland, Ore.—p. 967.
Physiology of Disturbances of Ocular Motility. W. B. Lancaster, Boston.—p. 983.
Lesions of Fundus in Essential Hypertension and in Arterial and Renal Diseases. M. Cohen, New York.—p. 994.
New Method for Rebuilding a Lower Lid: Report of Case. W. L. Hughes, Hempstead, N. Y.—p. 1008.
Naevus Flammeus Associated with Glaucoma: Report of Case. G. H. Mehney, Ann Arbor, Mich.—p. 1018.
Significance of Retinal Fatigue in Study of General and Nervous Diseases. S. Bockoven and Blanche Wilcox, Washington, D. C.—p. 1024.
Glaucoma and Sympathetic Ophthalmia. B. Samuels, New York.—p. 1031.
Experimental Hypertension: IV. Clinical and Pathologic Studies of Eyes: Preliminary Report. J. E. L. Keyes and H. Goldblatt, Cleveland.—p. 1040.
Ocular Manifestations of Malignant Nasopharyngeal Tumors: Report of Cases. K. Schlivek, New York.—p. 1055.
Repair of Rupture of Wound After Extraction of Cataract: Report of Cases. L. Bothman, Chicago.—p. 1073.
Diagnostic Significance of Epinephrine Instilled into Conjunctival Sacs. L. Hubert, New York.—p. 1076.
*Treatment of Dendritic Keratitis with Quinine Bisulfate. E. Selinger, Chicago.—p. 1085.

Treatment of Dendritic Keratitis with Quinine Bisulfate.—In the last two years, Selinger treated eleven adults having moderately severe to severe dendritic keratitis with quinine bisulfate in addition to the usual treatment with hot compresses, atropine and bandages. An ophthalmic ointment containing 2 per cent quinine bisulfate was applied to the unanesthetized conjunctival sac twice a day by the patient. No massage was used. The subjective symptoms improved from the beginning and in most of the cases the corneal lesions healed within a week to ten days. In practically all the cases the eyeball was pale within one or two weeks. In no case did the disease last more than three weeks. Recurrences have not

been seen to date. Most of the patients had an accompanying or preceding infection of the upper respiratory tract. The good results obtained with local quinine therapy suggest a destructive action on the virus producing the disease. The same treatment was also tried in a case of herpes zoster with corneal involvement. The result was good, the corneal lesion going on to healing within three weeks.

Archives of Surgery, Chicago

34: 977-1178 (June) 1937

Autolysis of Tissue in Vivo: Experimental Study with Its Clinical Application in the Problem of Trauma to Liver. F. F. Boyce and Elizabeth M. McFetridge, New Orleans.—p. 977.
*Acute Phlegmonous Enteritis. E. Clark and A. Wright, New York.—p. 997.
Sclerosing Sarcoma of Bone. D. Lewis and C. F. Geschickter, Baltimore.—p. 1010.
Torsion of Fallopian Tube in the Virgin: Report of Case and Review of Literature. L. L. Blum, Terre Haute, Ind., and B. E. Sayre, Chicago.—p. 1032.
Experimental Studies on Lymphatic Blockage. A. Blalock, C. S. Robinson, R. S. Cunningham and Mary E. Gray, Nashville, Tenn.—p. 1049.
Arthroplasty in the Lower Extremity. S. Kleinberg, New York.—p. 1072.
*Painful Coccyx. G. A. Duncan, Norfolk, Va.—p. 1088.
Artificial Maintenance of Circulation During Experimental Occlusion of Pulmonary Artery. J. H. Gibbon Jr., Philadelphia.—p. 1105.
Effect of Vagotomy on Gastric Motor Mechanism of Man. L. E. Barron, New Haven, Conn., and G. M. Curtis, with technical assistance of W. T. Haverfield and B. Lauer, Columbus, Ohio.—p. 1132.
Scoliosis: Functional Decompensation. E. Hauser, Chicago.—p. 1159.
Effect of Cinchophen on Gastric Secretion: Experimental Study. L. K. Stalker, J. L. Bollman and F. C. Mann, Rochester, Minn.—p. 1172.

Acute Phlegmonous Enteritis.—Clark and Wright cite two cases of acute phlegmonous inflammation seen at necropsy at the Bellevue Hospital. In one the condition was limited to the jejunum and in the other to the ileum. The pathologic and clinical characteristics in forty-one similar case reports gathered from the literature are reviewed. It appears that acute phlegmonous enteritis is a well defined clinical and pathologic entity, and although it is most likely an infection of the wall of the intestine with pyogenic micro-organisms of enterogenous origin, a port of entry is only rarely demonstrated. The possible relationship of the acute phlegmonous lesion of the intestine to chronic nonspecific inflammatory lesions of the intestine is discussed, and a case is presented which suggests a transitional stage between the two.

Painful Coccyx.—Duncan states that from 1924 to 1934 278 (97 per cent were women) patients were admitted to the outpatient department of the New York Orthopaedic Dispensary and Hospital with the complaint of pain in the coccyx. The average age was 34 years. The most common cause of the fall in this group of patients was slipping on an icy pavement and landing in the sitting position. The interval between the time of injury and the time of the patient's admission to the hospital for treatment varied from three days to six months. Nonoperative treatment consisted of improving the patient's posture, having her sit erect and pull the buttocks in under the trunk, thereby taking the superincumbent body weight off the coccyx and causing the soft parts surrounding the coccyx to act as a natural cushion. Hot sitz baths for from twenty to thirty minutes twice each day proved of value. Constipation, when present, was relieved by suitable laxatives. Local massage has proved beneficial to many of these patients. Steady but firm stretching of the coccyx posteriorly has been done on patients for several consecutive visits, with relief from pain. This is done to overcome the spasticity of the muscles having their insertion on the coccyx and to prevent the formation of adhesions and contractures in the sacrococcygeal joint and the surrounding coccygeal structures. Local injections of from 70 to 80 per cent alcohol, physiologic solution of sodium chloride or 2 per cent solution of procaine hydrochloride have given only transient relief or were entirely unsatisfactory. Of the 248 patients treated by nonoperative methods, fifty-four were examined from one to four years after the onset of their coccygeal pain. Only two continued to complain of a painful or tender coccyx. Fusion of the sacrococcygeal and intercoccygeal joints had taken place in a large number of the patients, and in the remainder there was limited motion. This limitation of motion in the coccygeal joints, coeval with cessation of pain, is additional evidence that the coccygeal pain was coming from a lesion of the joint. Injection of alcohol about the coccyx may not cause degeneration of the coccygeal nerves, but by causing scar tissue to form it may so limit motion of the coccyx that the pain is diminished or cured. In the two patients who continued to complain of coccygeal pain, motion at the sacrococcygeal joint caused an identical pain. Relief from pain was experienced within one month after the injury by thirty-six of the fifty-four patients, by eleven within two months and by five within six months. The results seem to indicate that the nonoperative form of treatment should be tried for a period of six months before operative resection of the coccyx is resorted to.

Thirty of the patients in the total group had operative resection of the coccyx. The average duration of their symptoms before resection of the coccyx was eighteen months. Patients were followed on an average for two years after coccygectomy. Twenty-two of these patients were relieved completely of coccygeal pain, three had only partial relief from pain and five were unimproved.

Bulletin of Neurol. Inst. of New York, New York

6: 1-162 (Jan.) 1937

Cytoplasmic Bodies in Case of Megalencephaly. A. Wolf and D. Cowen Jr., New York.—p. 1.
Etiology of Headache: II. Occurrence and Significance of Headache During Ventriculography. E. D. Brewer.—p. 12.
Roentgen Treatment of Tumors of the Brain in Operating Room by Direct Radiation Through Open Wound. C. A. Elsberg, L. M. Davidoff and C. G. Dyke, New York.—p. 19.
Prolonged Fever Following Removal of Large Tumors from Posterior Cranial Fossa. W. Ehrlich, New York.—p. 33.
Acute Nontraumatic Encephalomalacia Complicating Neurosurgical Operations in Sitting Position. A. Wolf and J. Siris, New York.—p. 42.
Study of Sugar Tolerance Tests in 200 Patients with Convulsions. H. H. Drewry, New York.—p. 62.
Hypophysis Cerebri in Petromyzon Marinus Dorsatus Wilder. F. Tilney, New York.—p. 70.
The Sense of Smell: XIV. Relation of Cerebral Cortex to Olfactory Impulse and Areas of the Brain Involved in Fatigue of Eense of Smell. C. A. Elsberg, New York.—p. 118.
Id.: XV. Note on Value of Tests of Olfactory Acuity for Diagnosis of Pituitary Tumor. C. A. Elsberg and Jane Stewart, New York.—p. 126.
Aphasia: I. Technic of Clinical Examinations. E. C. Chesher, New York.—p. 134.
Quantitative Measurement of Apperception of Passive Movement. R. W. Laidlaw and Mary Alice Hamilton.—p. 145.
Effect of Pilocarpine on Neurogenic Urinary Retention. J. S. Dean, New York.—p. 154.

Canadian Medical Association Journal, Montreal

36: 561-668 (June) 1937

*Control of Diabetes Mellitus with Protamine Zinc Insulin in Surgery: Based on Study of Twenty-Five Cases. A. F. Fowler, E. H. Bensley and I. M. Rabinowitch, Montreal.—p. 561.
Spontaneous Subarachnoid Hemorrhage and Brain Tumor: Report of Three Cases. C. K. Russel and J. Kershman, Montreal.—p. 568.
Practical Perimetry: Construction and Operation of Tangent Screen. A. J. McLean, Portland, Ore.—p. 578.
*Experimental Gas Embolism: I. Intravenous Air Embolism. H. F. Richardson, B. C. Coles and G. E. Hall, Toronto.—p. 584.
Congenital Malformations of Vessels of the Brain and Spinal Cord: Case. J. A. Hannah, Toronto.—p. 588.
Multilocular Polycystic Tumor of Pancreas. R. E. McKechnie and J. T. Priestley, Rochester, Minn.—p. 592.
Treatment of Scoliosis. R. G. Huckell, Edmonton, Alta.—p. 593.
Hay Fever in Alberta. H. C. Jamieson, Edmonton, Alta.—p. 595.
Coincidental Diabetes Mellitus and Renal Glycosuria. E. Lozinski and L. I. Frohlich, Montreal.—p. 598.
Puerperal Infection. R. Mitchell, Winnipeg, Manit.—p. 599.
New Method of Rhinoplasty for Sinking of Tip of Nose. J. N. Roy, Montreal.—p. 603.
Hematoma of Abdominal Wall Simulating Intra-Abdominal Tumor. H. M. Robertson, Victoria, B. C.—p. 606.
Table for Degree of Involvement in Chronic Arthritis. D. Taylor, Montreal.—p. 608.
Measurement of Blood Loss in Nose and Throat Operations. F. D. McKenty, Winnipeg, Manit.—p. 611.
Internal Secretions and Cancer. Pauline Beregoff-Gillow, Montreal.—p. 614.
Modifications of Marshall's Clinical Method for Determination of Urinary Urea. A. Hunter, Toronto.—p. 616.

Control of Diabetes Mellitus with Protamine Zinc Insulin in Surgery.—To evaluate the action of protamine zinc insulin with respect to control of the diabetes immediately after operation, Fowler and his colleagues selected a variety of cases with regard to type of anesthetic, type of operation and severity of the diabetes. The twenty-five cases included gangrene of the extremities, cellulitis of the feet and carbuncle and other not minor conditions. The operations that were necessary in these cases included cholecystectomies, hysterec-

tomy, amputations, incision of abscess, repair of birth trauma and tonsillectomies. The average control of diabetes in comparable patients both before and after the operations was much better with protamine zinc insulin than with unmodified insulin. Though the action of protamine zinc insulin on the blood sugar is ordinarily slower than that of the unmodified insulin, by the use of large injections it may be made to act as rapidly as the unmodified product. Therefore, with respect to rapid action alone protamine zinc insulin is not contraindicated in preparation of diabetic subjects for operation or for control of postoperative emergencies. By proper dosage the action of protamine zinc insulin may be prolonged sufficiently by single daily injections to permit the use of intravenous injection of dextrose after operations and also the normal rate of healing of wounds. The sustained action also appears to be sufficient to permit healing of infected tissues (cellulitis).

Experimental Gas Embolism.—Richardson and his associates investigated the problem of experimental gas embolism on dogs and consider the relationship between the rate of injection of air and the time necessary to produce death when air is administered intravenously. Following the intravenous administration of air, the animal either dies or recovers. When the amount of air injected is small the animal usually shows no signs of respiratory or cardiac distress. When larger amounts are injected, either slowly or rapidly, respiratory distress and cardiac embarrassment are evident, but the animal may survive and recovery be complete. On the other hand, the dyspnea and cardiac embarrassment may be of such magnitude that the injection proves fatal. This fatal issue may be either immediate or delayed. When the injection of air is rapid, respiratory failure predominates and death occurs almost immediately; if sufficiently large amounts are given, instantaneously acute cardiac dilatation occurs and death is extremely rapid. When the air is injected at an intermediate rate or when a moderate amount of air is injected suddenly, respiratory and cardiac symptoms are evident. Although partial recovery takes place, the animal may develop acute pulmonary edema and die within a few hours. A bronchopneumonia may become superimposed on an otherwise nonfatal pulmonary edema, resulting in death after several days. Some anesthetized animals, following the injection of air, tend to hyperventilate themselves very markedly. These animals can tolerate larger quantities of air than other anesthetized animals whose respirations are less markedly affected. The general condition of the animal, as evidenced by its systemic blood pressure, plays a great part in its tolerance to intravenously injected air; much less air is fatal to an animal with a low blood pressure than if the blood pressure is normal. This is of paramount importance in considering the amounts of air that apparently may prove fatal in cases of criminal abortion with which there is associated trauma, pain, apprehension and loss of blood.

Journal of Allergy, St. Louis

8: 321-426 (May) 1937

The Dry Pollen Nasal Test: Its Technic, Interpretation and Indications. G. I. Blumstein, Philadelphia.—p. 321.
*Alum-Ragweed Precipitate: Preparation and Clinical Investigation: Preliminary Report. A. R. Zoss, C. A. Koch and R. S. Hirose, Cincinnati.—p. 329.
Studies in Preparation of Pollen Extracts: I. Filtration by Carbon Dioxide Pressure. H. H. Gelfand, G. Flamm, J. G. Center and A. J. Heifitz, New York.—p. 336.
Immunologic Relationship Between Grass Pollen and Seed. L. Farmer, New York.—p. 338.
Interruption of Asthmatic Crisis by Tribrom-Ethanol (Avertin). A. M. Fuchs, New York.—p. 340.
*The Heart in Bronchial Asthma. W. A. Colton, Kecoughtan, Va., and T. Ziskin, Minneapolis.—p. 347.
Triplicate Determinations of Sugar Tolerance in Mild and Severe Asthma. H. C. Wagner and F. M. Rackemann, with technical assistance of Martha E. Duffy, Boston.—p. 353.
Rôle of Cladosporium, a Common Mold, in Allergy. H. S. Bernton and C. Thom, Washington, D. C.—p. 363.

Alum-Ragweed Precipitate.—Zoss and his co-workers isolated the precipitate produced by the addition of potassium alum to aqueous ragweed extract. They experimented with the substance on twelve guinea-pigs that were injected subcutaneously with 1 cc. each of the suspension of alum-ragweed precipitate (12,000 protein nitrogen units per cubic centimeter). An interval of twenty-two days followed. Three guinea-pigs were injected intravenously with 0.25 cc. of aqueous ragweed extract. These developed signs of definite anaphylactic shock but recovered. Each of the remaining nine guinea-pigs received intravenously between 0.5 and 1 cc. of the same aqueous ragweed extract. These died of typical anaphylactic shock. Intracutaneous injections of the undiluted suspension of alum-ragweed precipitate in amounts up to 0.2 cc. in a series of normal subjects produced no local urticarial, erythematous or pruritic response. No determinable reactions were noted in normal subjects on subcutaneous injection of the undiluted suspension in amounts up to 0.5 cc. In the preseasonal treatment of twenty-four ragweed sensitive patients with alum-ragweed precipitate by the routine method of preseasonal pollen therapy, beginning with 1, 10 or more units (as was indicated by the sensitivity of the individual patient), the material was administered to the various patients in increasing amounts at intervals of from four to seven days. Different maximal doses were given to the various patients, the maximum varying between 200 and 5,000 protein nitrogen units. Good results were obtained in 42 per cent, fair results in 21 per cent and poor results in 37 per cent. A series of fifty control patients treated preseasonally in 1936 with aqueous ragweed extract in maximal tolerance doses showed 60 per cent good, 18 per cent fair and 22 per cent poor results. Patients who received the higher maximal doses of the precipitate had better results than those on lower maximal doses.

The Heart and Bronchial Asthma.—Colton and Ziskin made a study of the heart in eighty-four cases of bronchial asthma. There were nine deaths in this group, and six cases came to necropsy. From a pathologic standpoint the heart was not greatly involved in uncomplicated cases of bronchial asthma. Dilatation of the right side of the heart was found in one patient dying of acute asphyxia. Two cases complicated by various degrees of emphysema, bronchiectasis and lung abscess showed hypertrophy, dilatation and congestive heart failure. Pathologic changes in the six cases examined post mortem are reported. No clinical evidence of heart disease was found in the majority of cases. Definite evidence of right ventricular strain with a tendency to myocardial involvement was noted in the electrocardiographic study. It must be concluded that the heart does not remain singularly free from injury in bronchial asthma and that right ventricular strain with a tendency to myocardial involvement and heart muscle damage does occur as the disease progresses and emphysema ensues.

Journal of Experimental Medicine, New York

65: 757-916 (June) 1937

Studies on Suprarenal Cortex: VI. Effect of Suprarenal Cortical Hormone on Electrolyte Excretion of Intact Normal Dog: Proposed Method of Comparative Assay. G. A. Harrop and G. W. Thorn, Baltimore.—p. 757.
Effect of Prolonged Cultivation in Vitro on Pathogenicity of Yellow Fever Virus. M. Theiler and H. H. Smith, New York.—p. 767.
Use of Yellow Fever Virus Modified by In Vitro Cultivation for Human Immunization. M. Theiler and H. H. Smith, New York.—p. 787.
Adaptation of Unmodified Strains of Yellow Fever Virus to Cultivation in Vitro. H. H. Smith and M. Theiler, New York.—p. 801.
Toxemia of Pregnancy in Rabbit: I. Clinical Manifestations and Pathology. H. S. N. Greene, Princeton, N. J.—p. 809.
Infectious Catarrh of Mice: I. Natural Outbreak of Disease. J. B. Nelson, Princeton, N. J.—p. 833.
Id.: II. Detection and Isolation of Coccobacilliform Bodies. J. B. Nelson, Princeton, N. J.—p. 843.
Id.: III. Etiologic Significance of Coccobacilliform Bodies. J. B. Nelson, Princeton, N. J.—p. 851.
Action of Immune Serum on Human Influenza Virus in Vitro. T. P. Magill and T. Francis Jr., New York.—p. 861.
Autolytic System of Pneumococci. R. J. Dubos, New York.—p. 873.
Chemical Studies on Bacterial Agglutination: III. Reaction Mechanism and Quantitative Theory. M. Heidelberger and E. A. Kabat, New York.—p. 885.

Journal-Lancet, Minneapolis

57: 239-286 (June) 1937

The Schilling Hemogram in Acute Infections. W. H. Griffith, Huron, S. D.—p. 239.
Benefactions of Surgery to Man. O. H. Wangensteen, Minneapolis.—p. 243.
Medical Care of University Students. W. E. Forsythe, Ann Arbor, Mich.—p. 256.
Aural and Nasal Problems in General Practice. F. L. Bryant, Minneapolis.—p. 261.
Silicosis and Other Dust Diseases. A. E. Russell, Washington, D. C.—p. 265.

Journal of Pediatrics, St. Louis

10: 577-718 (May) 1937

Studies on Urinary Excretion and Blood Concentration of Ascorbic Acid in Infantile Scurvy. T. H. Ingalls, Boston.—p. 577.
*Fulminant Streptococcic Sepsis in Infancy. J. M. Rector, San Francisco.—p. 592.
Comparative Study in Diagnosis and Treatment of Rickets with Observations of Normal and Abnormal Serum Phosphatase. D. J. Barnes and M. Doris Carpenter, Detroit.—p. 596.
Human Blood Serum in Treatment of Anemia Associated with Jaundice in the New-Born Infant. G. N. Krost, Chicago.—p. 613.
Congenital Obstruction of Alimentary Tract. H. A. Reisman, Jamaica, N. Y.—p. 622.
Postoperative Pulmonary Atelectasis. H. Levy and A. M. Litvak, Brooklyn.—p. 632.
Treatment of Pertussis with Specific Soluble Antigen. H. Gold, Chester, Pa.—p. 641.
*Effect of Repeated Blood Transfusions on Erythrocyte Sedimentation Rate in Rheumatic Heart Disease. L. C. Rosenberg, Newark, N. J.—p. 648.
Peripheral Neuritis Due to Lead. J. E. Brown Jr. and E. E. Smith, Columbus, Ohio.—p. 656.
Nonhemolytic Streptococcus Meningitis: Report of Case. R. G. Hodges, Boston.—p. 666.

Fulminant Streptococcic Sepsis in Infancy.—Rector encountered eight cases of a particularly lethal type of fulminating streptococcic infection in infants. The instances of acute sepsis described differ primarily because death follows the onset of a bacteremia so quickly that localizing signs referable to individual organs rarely have time to appear. The disease is not primarily a pneumonic process but rather a widespread involvement of the entire body secondary to a bacteremia. The most important and typical feature is early bronchopneumonia of an interstitial type associated with peribronchitis. In addition there is often an extensive cerebral edema without local cerebral lesions and a diffuse edema of the optic nerves and spinal cord. Other common disorders include petechial hemorrhages throughout the viscera, microscopic venous thrombi in the lungs and elsewhere, and "toxic changes" in the spleen and lymph nodes. In a few cases, prior to the onset of apparent critical illness a vague history of irritability, restlessness, refusal of food and fever can be elicited. During this short prodromal stage, occasional vomiting and mild diarrhea are frequently seen. More often the infant is said to have been perfectly well until the sudden onset of his fatal illness. When the disease is well established there is commonly hyperpyrexia, meningism, profuse diarrhea, pharyngitis and uncontrollable convulsions occurring singly or in combination, together with the usual manifestations of any severe infection. If debilitation is extreme, the course may be essentially afebrile. Among the eight cases the duration of illness varied from one to six days, with an average duration of sixty hours. The age of greatest susceptibility is apparently from 4 to 7 months. The determination of a pharyngitis or some other acute focus in the upper respiratory tract suggestive of a port of entry is significant. Whenever a critical illness is accompanied by convulsions uncontrolled by sedatives and the spinal fluid examination is negative, acute sepsis should be considered. The interstitial pneumonia so often present seldom gives rise to abnormal physical signs, for death intervenes before an appreciable amount of lung parenchyma has been involved. While positive blood cultures offer the best confirmatory evidence, organisms are not invariably isolated from the blood, and the clinical picture should occupy first place in establishing diagnosis.

Rheumatic Heart Disease.—Rosenberg asserts that no disease of childhood is more discouraging to treat than rheumatic heart disease. He reports the case of a boy, aged 9 years, who was having his sixth attack of rheumatic heart disease. After twelve weeks of continuous fever and a persistent accelerated sedimentation rate with no prospect of the infection subsiding, repeated blood transfusions were given and apparently as a result of their use there occurred an immediate slowing of the sedimentation rate and a drop in temperature, accompanied by clinical improvement. While no hope of benefiting the damaged heart valves or restoring the myocardium to normal by blood transfusions is entertained, it is the author's belief, based on the outcome in this case and in others referred to, that giving blood transfusions may be a method of suppressing an attack of rheumatic fever.

Kansas Medical Society Journal, Topeka

38: 193-236 (May) 1937

Anaerobic Panophthalmitis. J. F. Gsell and G. F. Gsell, Wichita.—p. 193.
Treatment of Acute Cholecystitis. T. G. Orr, Kansas City.—p. 194.
Maternal, Neonatal and Infant Death Rates in Kansas: 1931-1935. H. R. Ross, Topeka.—p. 198.
Method of Reviewing Gross Anatomy. H. B. Latimer, Lawrence.—p. 204.
Prolapse of Umbilical Cord. R. A. McCurdy, Eldorado.—p. 206.
Sight Begins at Sixty-Two. M. E. Brownell, Wichita.—p. 207.
Treatment of Narcolepsy with Benzedrine Sulfate. H. N. Tihen, Wichita.—p. 208.

New England Journal of Medicine, Boston

216: 915-960 (May 27) 1937

Administration of Evipal Soluble to Infants and Children. H. W. Hudson Jr., Brookline, Mass.—p. 915.
Lung Cysts: Report of Three Cases. L. Rabinowitz and E. J. Rogers, Pittsford, Vt.—p. 919.
*Effect of Benzedrine Sulfate on Hematopoietic System. P. G. Schube, Naomi Raskin, Dorchester Center, Mass., and Eleanor Campbell, Boston.—p. 922.

Effect of Benzedrine Sulfate on Hematopoietic System.—Because any new drug is potentially dangerous from the point of view of causing damage to the hematopoietic system with resulting changes in the hemoglobin content of the erythrocytes and alterations in the type, quantity and proportions of erythrocytes and of leukocytes, Schube and his associates investigated the ability of benzedrine sulfate to alter these blood elements. The eighty-six subjects used for the study were all physically normal. Six patients received 10 mg. of benzedrine sulfate by mouth daily for thirty days. The blood picture was followed at weekly intervals throughout this period and for several subsequent weeks. Seventy patients received 10 mg. of benzedrine sulfate by mouth daily for thirty days. Their blood picture was studied from six to twelve months later. Ten patients received 30 mg. of benzedrine sulfate subcutaneously daily for fourteen days and the blood picture was studied from six to twelve months later. In the first group of cases (1) there were no significant alterations in the red blood cell counts, (2) the hemoglobin in three weeks of drug administration showed first a decrease and then an increase, (3) the leukocyte count showed no consistent change, (4) the polymorphonuclear count, after an initial drop during the first two weeks, returned to its original level, (5) the number of small lymphocytes decreased in most instances during the first two weeks and remained at the new level throughout the experiment, (6) there was very little change in the number of large lymphocytes, monocytes, basophils and eosinophils and (7) no abnormal or young erythrocytes or leukocytes were found. These changes were not beyond the range of the experimental error of the methods used and were certainly not pathologically significant. In the second group of cases a study of the blood picture from six to twelve months later showed it to be normal. This included the hemoglobin estimation, the erythrocyte, leukocyte and differential counts, and the size, shape and staining reaction of the cells. In the last ten cases a study of the blood picture from six to twelve months later showed no abnormality in any detail.

New Orleans Medical and Surgical Journal

89: 667-726 (June) 1937

What Ails the Doctors? C. M. Horton, Franklin, La.—p. 667.
Teaching the Public About Health. W. W. Bauer, Chicago.—p. 668.
Clinical Aspects of Goiter. H. R. Mahorner, New Orleans.—p. 673.
Etiology of Venereal Lesions. E. von Haam and C. Lafferty, New Orleans.—p. 683.
Plasmodium Ovale. J. S. D'Antoni, New Orleans.—p. 691.
Certain Factors in Epidemiology of Malaria in the Southern United States. E. C. Faust, New Orleans.—p. 692.
Rôle of Malaria in General Paresis. L. A. Golden, New Orleans.—p. 694.
Modern Treatment of Malaria. C. F. Craig, New Orleans.—p. 697.

Philippine Islands Med. Association Journal, Manila

17: 197-262 (April) 1937

Study of Food Intake of Inmates of Welfareville. I. Concepcion, Manila.—p. 197.
Infant Mortality in City of Manila. F. Z. Cruz, Manila.—p. 211.
Malaria Survey of Los Baños College Campus. P. I. de Jesus, Manila.—p. 221.
Pan Sinus Operation. L. D. Abad, E. G. Brion and J. C. Antonio, Manila.—p. 235.

Public Health Reports, Washington, D. C.

52: 659-684 (May 21) 1937

Strain of Endemic Typhus Fever Isolated from a Field Mouse. G. D. Brigham.—p. 659.
Susceptibility of Animals to Endemic Typhus Fever. G. D. Brigham.—p. 660.
Studies in Chemotherapy: IV. Comparative Studies of Sulfonamide Compounds in Experimental Pneumococcus, Streptococcus and Meningococcus Infections. S. M. Rosenthal, H. Bauer and Sara E. Branham.—p. 662.

52: 685-722 (May 28) 1937

*Studies in Chemotherapy: V. Sulfanilamide, Serum and Combined Drug and Serum Therapy in Experimental Meningococcic and Pneumococcic Infections in Mice. Sara E. Branham and S. M. Rosenthal.—p. 685.

Studies in Chemotherapy.—Branham and Rosenthal state that sulfanilamide has shown a marked therapeutic action in mice in which a meningococcic infection has been produced experimentally. Twenty strains of meningococci representing types I, II and III have been used. A high percentage of treated animals survived fatal doses of the micro-organisms even when the single drug injection was given two hours after inoculation with the bacteria. The drug has been found to be more effective by subcutaneous injection than by mouth when administered in the same dosage. A comparison was made between sulfanilamide and serum therapy with ten strains of meningococci. With three the drug was more effective, with four the serum was more effective, and with three strains the activity was equal. The combination of serum and drug therapy yielded much better results than either alone. In four experiments in which poor curative effects were obtained with serum or sulfanilamide only, combined therapy resulted in the survival of most of the mice. A synergistic action seemed to exist. The superiority of the combined therapy was likewise demonstrated in mice infected with type I pneumococci. The results suggest that a combination of sulfanilamide and serum therapy in meningococcic and pneumococcic infections in man is worthy of trial.

Review of Gastroenterology, New York

4: 76-159 (June) 1937

Experimental Arthritis and the Gastro-Enterologists. M. E. Rehfuss, Philadelphia.—p. 76.
Lymphosarcoma of Gastro-Intestinal Tract. E. C. Reifenstein, Syracuse, N. Y.—p. 82.
*Clinical Consideration of Defensive Factors of Tissues in Etiology of Peptic Ulcer. L. A. Carlson and A. B. Rivers, Rochester, Minn.—p. 96.
Changes and Results of Decade in the Management of Gastric Ulcer. H. L. Segal and W. J. M. Scott, Rochester, N. Y.—p. 101.
Intubation Studies of Human Small Intestine: IX. Factors in Maintenance of Physiologic Conditions. T. G. Miller, Philadelphia.—p. 115.
Etiology of Gallstones: I. Solvent Action of Vitamins on Gallstones: Experimental Study. S. Morrison and M. Feldman, Baltimore.—p. 120.
Effects on Digestion of Mixture of Carbohydrate and Protein in Diet. E. Foldes, New York.—p. 125.
Gastric Autonomic Imbalance in Early Youth. S. B. Kaplan, Newark, N. J.—p. 127.
Diverticula and Diverticulitis. C. J. Drueck, Chicago.—p. 134.
After-Treatment of Cholecystectomy: Hydromineral Therapy. M. Vauthey, Vichy, France.—p. 139.

Etiology of Peptic Ulcer.—Carlson and Rivers say that the factor common to all peptic ulcers is that they occur only in tissues bathed by the acid-pepsin gastric chyme. Eroding potentialities promptly develop in tissues that are unaccustomed in their natural physiologic existence to contact with the acid chyme, if by artificial procedures the gastric contents are made to impinge on them. These tissues are more likely to succumb to erosion than are tissues which are normally bathed in the acid gastric juice. The crucial factor of derangement may in such instances exist in disturbances of the tissues themselves. The persistent unmitigated bombardment of tissues by highly acid chyme may break down tissues that have normally intact defense mechanisms. It is not difficult to assume that under such conditions gastric chyme which does not possess unusual erosive characteristics will cause dissolution of tissues, which may lead ultimately to erosion and ulceration. Therefore treatment must not be directed solely to the neutralization of the acid factor but must include some measures to accentuate the defensive mechanisms of these tissues. Even though there may be wide variations in the concentration of acid juice during the day and night, the mucosa is still able to protect itself adequately against ulceration. If, for any reason, this margin of safety is decreased and lowering of the defensive mechanism of the tissues occurs, ulceration might conceivably develop in the presence of acid gastric chyme that does not possess unusual erosive tendencies.

Surgery, Gynecology and Obstetrics, Chicago

64: 977-1106 (June) 1937

Early Recognition and Treatment of Cervical Cancer. E. Novak, Baltimore.—p. 977.
*Diagnosis and Treatment of Tumors of Bladder by Means of Roentgen Rays. G. E. Pfahler, Philadelphia.—p. 989.
Glucose Tolerance as Diagnostic Aid in Jaundice: II. Further Differentiation of Cases Showing an Obstructive Type of Curve. H. G. Jacobi, New York.—p. 995.
*Fallacy of Use of Iodine Immediately After Bilateral Subtotal Thyroidectomy: Preliminary Report. M. Davison and L. J. Aries, Chicago.—p. 999.
Artificially Induced Thrombophlebitis, with Suggested New Approach to the Problem of Postoperative Pulmonary Embolism. D. H. Patey, London, England.—p. 1002.
Clostridium Welchii and Associated Organisms: Review and Report of Forty-Three New Cases. E. L. Eliason, W. H. Erb and P. D. Gilbert, Philadelphia.—p. 1005.
Differentiation Between Peripheral Arterial and Arteriolar Spasticity in Selection of Cases for Sympathetic Ganglionectomy. S. Perlow, Chicago.—p. 1015.
Hydatidiform Mole and Chorio-Epithelioma: A Five Year Study. A. Mathieu, Portland, Ore.—p. 1021.
Fallacies Concerning Chemically Sterilized Surgical Catgut Sutures, with Particular Reference to Use of Metallic Silver. R. O. Clock, New York.—p. 1027.
Eight Year Survey of Cesarean Sections at the William H. Coleman Hospital. G. W. Gustafson, Indianapolis.—p. 1035.
Renal Tuberculosis, with Especial Reference to Follow-Up Results in the Squier Clinic. H. H. Gile, New York.—p. 1046.
Reconstruction of Bile Ducts: New Method of Anastomosis. C. L. Hoag, San Francisco.—p. 1051.
Hemithyroidectomy in Stages in Treatment of Hyperthyroidism. S. F. Marshall, Boston.—p. 1055.
*Old Ununited Clavicular Fractures in the Adult. E. J. Berkheiser, Chicago.—p. 1064.
Fractures of Neck of Femur: Fixation by Means of Kirschner Wires or by Smith-Petersen Nails. N. Backer-Gröndahl, Bergen, Norway.—p. 1073.
Fractures of Patella. G. W. Hawley, Bridgeport, Conn.—p. 1074.
Deformity of Wrist Following Resection of Radial Head. R. W. Lewis and A. A. Thibodeau, New York.—p. 1079.
Economic Advantages of Early Protected Weight Bearing in Fractures of Leg, Foot and Ankle. F. B. Gurd, Montreal.—p. 1085.

Treatment of Bladder Tumors by Roentgen Rays.—Pfahler has succeeded in demonstrating both benign and malignant tumors, varying in size from 1 to 8 cm. It is not always possible to make an exact pathologic diagnosis by means of pneumocystography as to whether the tumor is malignant or benign. However, if a tumor is small, sharply defined and pedunculated, and especially if there are multiple tumors, the probabilities are that it is benign. If it is large, irregular on the surface and associated with a broad base, it is probably malignant, and if it is infiltrating in character it is always malignant. If the tumor has definitely infiltrated the wall of the bladder so that it cannot stretch normally, one obtains more definite evidence of a malignant growth than could be obtained cystoscopically. Since urologists state definitely that all tumors of the bladder are potentially malignant, the important matter is to demonstrate the tumor and to remove it by the best means possible, according to the indications in any individual case. The various combinations of treatment in tumors of the bladder have included excision, preceded or followed by irradiation; cystotomy and direct surface application of radium; cystotomy, electrocoagulation and insertion of radium needles or seeds; cystotomy, electrocoagulation and surface application of radium to the base of the tumor; preliminary roentgen therapy, local destruction, subsequently followed by additional roentgen therapy, and high voltage roentgen therapy, with high filtration, supplemented, if necessary, with electrocoagulation of any remnant that does not respond to irradiation. The author has obtained the best results by the last method.

Fallacy of Use of Iodine After Thyroidectomy.—Davison and Aries studied 100 consecutive patients with hyperthyroidism, irrespective of type, from the medical services of the Cook County Hospital and the University Hospital after having been carefully prepared by iodinization and supportive treatment. In all of these patients the classic operation of bilateral subtotal thyroidectomy was done in one stage. Fifty patients were given compound solution of iodine after operation

as in the usual procedure: rectally in a dosage of 1 drachm (4 cc.) immediately on the return from the operating room, and from that day on oral administration of 10 minims (0.6 cc.) three times daily. This amount is greatly in excess of that required for iodinization. The second group of fifty patients were not given any iodine. Other than this exception, the routine postoperative treatment was the same in the two series, consisting of a minimal amount of 2,000 cc. of 10 per cent dextrose given intravenously in each twenty-four hours for two days, and one-sixth grain (0.01 Gm.) of morphine administered as was found necessary for restlessness. The postoperative course of both series was judged by the temperature, pulse, respiration and the general toxicity of the patient, on the basis of 1 to 4 plus. The two series are fairly comparable as to average original metabolic rate, average reduction in the rate following the preparation with iodine, and the average number of days required for optimal preoperative improvement. In instances in which the temperature and pulse rate rose disproportionately the administration of continuous intravenous dextrose by dilution produced a steady fall in the temperature and pulse and a general steady improvement in the toxic reaction of the patients not receiving iodine postoperatively. The other series of patients who developed equally high temperature and rapid pulse rates did not respond any more rapidly to iodine and intravenous dextrose. The patients to whom iodine was not administered after operation had an average milder reaction than those who were given iodine. The patients receiving iodine who developed postoperative toxic phenomena did not seem to be influenced any more rapidly by the use of iodine than those who were not given iodine. From this it would seem that the proper attack on untoward reactions following bilateral subtotal thyroidectomy is dilution of the thyroxine in the circulating blood stream by the administration of enteral or parenteral fluids. There is no combination clinically shown to exist between iodine and thyroxine in the circulating blood. If sufficient gland has been removed and if the patient has been adequately prepared before operation, the use of postoperative iodine seems to have no rational basis. The use of iodine is still definitely indicated in such incomplete operations as polar ligations, lobectomy and the removal of discrete adenomas, in all of which cases residual thyroid tissue has been left behind, necessitating further protective iodinization.

Old Ununited Clavicular Fractures.—Berkheiser believes that the present day treatment of clavicular fractures, particularly in adults, leaves a good deal to be desired. He is confident of this because within a comparatively short period he has observed nine cases of ununited clavicular fractures of long standing in adults. Six of these had brachial plexus involvement and seven had to be subjected to open surgical treatment and correction owing to the disability of the patients. Recently one case of fracture of the clavicle with malunion and severe brachial plexus involvement was seen and operative correction was advised. Immediate surgical intervention appears to be indicated if there is marked displacement of the fragments, which cannot be alined and maintained by the usual conservative treatment of reduction and bandaging. In the treatment of old ununited clavicular fractures in adults the use of the tibial bone graft with immobilization is recommended as the method of choice. In order to avoid the disastrous complications of infection, the operative field should have a forty-eight hour preoperative preparation and then the operative area should be painted with iodine and alcohol at the time of operation. A semicircular incision is made below the clavicle from a point 1 inch lateral to the sternoclavicular joint extending nearly to the acromioclavicular joint through the skin, subcutaneous fat and platysma muscle. This incision should be made so that the lowest point is at the level of the second rib; thus the line of incision will not be directly over the prominence formed by the graft. The periosteum is incised along the anterior superior margin of the fragments and is freed from them by subperiosteal blunt dissection. On the inferior posterior margins of the ends of the fragments there are found long bone spurs. These bone spurs, adherent to the fascial sheath of the nerves and vessels, should be removed with caution. After the ends of the fragments are freed for some distance, the wound is covered with sterile towels. The tibia is exposed for a distance of 6 inches on its anteromedial surface through a longitudinal incision. The periosteum is not removed from the surface of the tibia, and particular care is taken to leave it attached to the bone. The graft is cut from the tibia with a motor saw, the full thickness of the cortex of the bone being used. After the graft is freed, four drill holes are made in it. The graft is removed from its bed, care being taken not to remove any of the attached periosteum or medullary bone, and applied to the anterior superior surface of the clavicular fragments so as to bridge the line of fracture. With the graft in place, drill holes are made in the clavicular fragments to correspond with those in the bone graft. The onlay bone graft is secured in position by heavy chromic catgut sutures, which are passed through the drill holes in the clavicular fragments and the graft and tied around both. The periosteum, muscular attachments and aponeuroses are then closed over the fragments by a continuous suture of strong chromic catgut. The wound is closed without a drain, with a continuous suture for the subcutaneous tissue and with black silk for the skin. The patients are placed on a flat, firm bed without pillows, but with a folded blanket between the shoulders after a snug Velpeau bandage is applied. The sutures are removed in two weeks and then a plaster shoulder spica, which extends from the wrist to the iliac crests, is applied with the elbow flexed to a right angle, thus holding the shoulder upward and backward as far as possible. The patients are then ambulatory for ten weeks, after which the spica is removed provided bony union is demonstrable.

Yale Journal of Biology and Medicine, New Haven

9: 393-508 (May) 1937

Daniel Webster and Hay Fever. C. Barker, New Haven, Conn.—p. 393.
Postoperative Pulmonary Complications: Statistical Study Based on Personal Observation of 1,215 Consecutive Major Operations. G. E. Lindskog, New Haven, Conn.—p. 403.
Tetanus Immunization. P. B. Cowles, New Haven, Conn.—p. 409.
*Relation of Hypersensitivity to Localization in and Dissemination of Streptococcus Viridans from Incisor Teeth of Rabbits. D. Weisberger, Boston.—p. 417.
Artificial Radioactivity and Neutron Rays in Biology and Medicine. J. H. Lawrence, New Haven, Conn.—p. 429.
Spermatogenesis in Hard-Shell Clam (Venus Mercenaria Linnaeus). V. L. Loosanoff, New Haven, Conn.—p. 437.
Incidence of Dental Caries in Seventy-Six Monkeys. B. G. Anderson and S. S. Arnim, New Haven, Conn.—p. 443.
Proteins of the Nervous System: Considered in Light of Prevailing Hypotheses on Protein Structure. R. J. Block, New York.—p. 445.

Hypersensitivity and Focal Infection. — Weisberger observed that rabbits previously sensitized to horse serum will develop and maintain a bacteremia for from twenty-four to seventy-two hours, provided the shock dose of horse serum and the bacteria are inoculated simultaneously into their veins. On the other hand, similar inoculations of horse serum and bacteria into nonsensitized rabbits produce a bacteremia for only one or two hours. This apparent interference with the mechanism for the removal of bacteria from the blood stream was present also in the viscera of the sensitized rabbits. Since it is believed that bacteria are normally removed from the blood by the cells of the reticulo-endothelial system, it is suggested that the response of the sensitized rabbits to horse serum is a manifestation of a temporary impairment of the function of these cells. The presence of a transient bacteremia from bacterial inflammatory foci after the intravenous inoculation of horse serum in sensitized rabbits indicates an antagonistic influence on the fixation of bacteria by inflammatory tissue. It is not difficult to understand the removal of Strepococcus viridans from the blood by means of the local inflammatory reaction produced in the sensitized tissues by the inoculation of horse serum. Even a minimal tissue response elicited by normal horse serum or saline solution in nonsensitized rabbits is capable of localizing the bacteria, provided the initial intravenous injection is sufficiently large. The presence of bacteria at the apexes of the teeth may be attributed partially to the localizing effect of the tissue response caused by the introduction of foreign protein into sensitized tissue by way of an exposed dentin or pulp canal. Previous studies have shown that it is possible to shock guinea-pigs with horse serum through the exposed dentin of incisor teeth. The significance of the generalized hypersensitive response in liberating bacteria from dental foci in human dental disease is not known.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Ophthalmology, London

21: 225-272 (May) 1937

*Laurence-Moon-Biedl Syndrome: Record of Case. J. R. Mutch.—p. 225.
Trial Spectacle for Prism Prescription. I. C. Michaelson.—p. 232.
Paget's Disease of the Eyelid Associated with Carcinoma. A. Hagedoorn.—p. 234.
Children with Defective Vision. R. A. Kaz.—p. 242.

Laurence-Moon-Biedl Syndrome.—Mutch reports a case showing the complete Laurence-Moon-Biedl syndrome: moderate obesity, hypogenitalism and hypospadias, mental retardation, polydactyly, syndactyly, optic atrophy and macular degeneration and lordosis of the lumbar vertebrae. The visual symptoms appeared late, being first evident at the age of 12. Remission occurred, and vision was apparently normal from 14 to 30 years of age. Unlike the usual state of affairs in retinitis pigmentosa, the patient sees best in a dull light and has no difficulty in finding his way about in the dark. At the periphery the retina appears to be normal, only the macular area being affected; this is not surprising when it is remembered that the macular area is photoptic in function and has a relatively high light threshold compared with the remainder of the retina, which is scotoptic in function; in the eye adapted for darkness it is about a thousand times more sensitive to light than the fovea. The patient's health at the age of 35 is generally good, aside from occasional headaches, impaired vision and a lowered mentality.

British Journal of Surgery, Bristol

24: 637-852 (April) 1937

Carcinoma of Male Urethra: Report of Case. H. Mortensen.—p. 669.
Fat Embolism: Report of Case, with Review of Literature. A. J. Watson.—p. 676.
Pyelography in Renal Hydatids. R. C. Begg.—p. 691.
Multiple Villous Papillomas of Gallbladder. F. R. Brown and D. F. Cappell.—p. 703.
Ruptured Aneurysm of Splenic Artery with Recurrence: Case. C. G. Parsons.—p. 708.
One-Stage Lobectomy for Hydatid Disease of Lung. A. L. d'Abreu.—p. 713.
Effect of Brachial Plexus Block on Patients Suffering from Secondary Traumatic Shock. H. J. B. Atkins.—p. 717.
*Fixation of Hip Joint by Means of Extra-Articular Bone Graft: Late Results. H. C. Trumble.—p. 728.
Treatment of Fractured Patella by Excision: Study of Morphology and Function. R. Brooke.—p. 733.
Extension Apparatus of Knee Joint: Note. E. W. H. Groves.—p. 747.
Some Reflections on Gastrostomy. E. S. J. King.—p. 749.
Experimental Lesions of Rabbit's Appendix. A. Q. Wells.—p. 766.
Intestinal Strangulation: Histamine Content of Peritoneal Transudate from Strangulated Intestinal Loops. I. Aird and W. K. Henderson.—p. 773.
*Experimental Observations on Spread of Carcinoma by Blood Stream, with Especial Reference to Difference Between Portal and Systemic Routes. D. H. Patey.—p. 780.
Basis of Treatment of Vasospastic States of Extremities: Experimental Analysis in Monkeys. P. B. Ascroft.—p. 787.

Fixation of the Hip Joint.—Since 1932 Trumble has obtained fixation of the hip joint by means of an extra-articular bone graft in eight cases of tuberculosis of the hip. The main features of the operation are as follows: The skin and the fascia lata of the thigh are incised in the same line, and the osseous insertion of the gluteus maximus muscle is divided a short distance from the bone. The musculocutaneous flap so formed is elevated enough to expose the tuberosity of the ischium, the femoral shaft and the sciatic nerves. A deep cleft is made in the tuberosity of the ischium with a broad chisel, and a trapdoor opening is cut in the posteromedial aspect of the shaft of the femur a little below the level of the lesser trochanter. A stout free bone graft of the requisite length is cut from the tibia; one end is inserted into a cleft in the tuberosity of the ischium and the other into the medullary cavity of the femur through the trapdoor opening. There were no postoperative troubles and no immediate infection or subsequent breaking down of the wounds in the eight cases. Three of the patients had sinuses discharging on the lateral and anterior aspects of the hip joint at the time of operation, while another had scars of healed sinuses. The sinuses have since healed in two of the cases. The graft united satisfactorily both with the femoral shaft and with the ischial tuberosity in seven cases. In one case the graft became displaced from the cleft made in the ischial tuberosity soon after operation by some ill advised movement of the limb but united strongly with the femur. Absolute fixation of the hip joint was attained in all but this case. In the years after operation, the increase in thickness and strength of the grafts has been striking and in some of the cases unexpectedly pronounced. In several instances the x-ray appearances are sufficient to show that the grafts, besides acting as distance bars or struts preventing adduction and movement at the hip joint, are transmitting a large proportion of the weight of the body to the femoral shafts. No increase in deformity has occurred in any case. Fracture of the graft occurred in one case, about eighteen months after operation, owing no doubt to the thinness of the graft. Roentgenograms taken at intervals after the fracture show that the fragments have increased in size and density and that there has been some attempt at union. There is no movement clinically appreciable at the hip joint. All but one of the patients were up and about in April 1936. The man in whom the graft failed to unite with the ischium is confined to bed with extensive pulmonary tuberculosis, although the hip disease is quiescent. Six patients have dispensed with all artificial aids to walking, and several have returned to their former occupations.

Spread of Carcinoma by Blood Stream.—Patey compared experimentally the spread by the blood stream of malignant disease by the portal and the systemic routes. The tumor used in the experiments was a carcinomatous one growing on the scrotum of a rabbit and successfully transmitted by Brown and Pearce to other rabbits by inoculation into various sites. The experiments showed that under controlled conditions tumor cells reaching the blood stream by the portal vein give rise to metastatic deposits in markedly fewer cases than tumor cells entering through a systemic vein. This observation corresponds to the observations on human malignant disease, which have shown that blood-borne metastases are much more frequent with tumor of the systemic territory, such as carcinoma of the breast and nevocarcinoma, than with tumor of the portal territory, such as carcinoma of the large intestine. The experiments suggest that one of the factors responsible for the diminished incidence in man of blood-borne metastases associated with tumor of the portal territory, as compared with that associated with tumor of the systemic venous territory, is the barrier of the liver. In the present experiments the liver showed deposits in thirteen of forty-four cases in which injection was by the systemic route and in five of forty-one in which injection was by the portal route. On a purely mechanical basis, one would expect the incidence of cases with deposits in the liver to be much greater after portal injection, in which all the cells injected enter the liver. It is possible that some of the deposits in the liver following systemic injection represent secondary emboli from deposits in other organs, such as the kidneys. But it is also possible, particularly in view of the work of Foulds on the rôle of the reticulo-endothelial system in the resistance to blood-borne metastasis, that the cells of this system in the liver play a part in the lower incidence of deposits in the liver following portal injection and also in the lower total incidence of deposits. The experiments also confirm the marked selective affinity of certain tumors for certain organs. Thus, in spite of the double barrier of the capillary network of the liver and the lungs, the kidney was the organ most frequently showing deposits after portal injection, just as after systemic injection. Thus, anatomic vascular factors seem to have a part subsidiary to this selective affinity.

British Medical Journal, London

1: 953-1008 (May 8) 1937

*Habitual Abortion and Stillbirth Syndrome and Late Pregnancy Toxemia: Vitamin E and Prolan-Progesterone Mechanism. J. Young.—p. 953.
Treatment of Midline Ventral Hernia. R. W. Power.—p. 958.
Hereditary Sebaceous Cysts. J. T. Ingram and M. C. Oldfield.—p. 960.
Osteochondritis Dissecans. D. S. Stevenson and F. L. Henderson.—p. 963.
Endometrial Biopsy. A. Sharman and H. L. Sheehan.—p. 965.
Epilepsy and Cysticercosis. A. J. P. Alexander.—p. 966.

Habitual Abortion-Stillbirth Syndrome.—Young is of the opinion that the evidence which has become available within recent years is consistent with the view that an important cause of the habitual abortion-stillbirth syndrome is a disturbance occurring in the metabolism of pregnancy, in which a

deficiency of vitamin E is involved. The evidence further raises the question as to the part which vitamin E plays in the gonadotropic-progesterone mechanism of pregnancy. Some evidence is adduced for the view that the foregoing considerations may likewise supply one with the missing x factor that has been previously postulated to explain the nontoxemic recurrence of abortion, stillbirth and accidental hemorrhage in women who are subject to eclampsia and preeclampsia. This evidence is consistent with the view that major degrees of deficiency tend to interruption of pregnancy in the early months without toxemic manifestations, whereas if the deficiency is less marked the pregnancy is capable of progressing to the later months with a consequent risk of toxemia. The evidence reviewed in this communication raises the question as to the part played by diet in racial fertility and more especially as to how far changes in the consumption of essential dietetic elements may have contributed to the declining birth rate.

Glasgow Medical Journal

9: 157-204 (April) 1937

Experimental Carcinogenesis. P. R. Peacock.—p. 157.
The Modern Treatment of Squint. J. N. Tennent.—p. 166.
The Deafened Man and Hearing Aids. J. K. Love.—p. 173.

Indian Medical Gazette, Calcutta

72: 193-264 (April) 1937

Tuberculosis in Infants and Children. A. C. Ukil.—p. 193.
Increasing Value of Modern Sanatorium Treatment as Judged by After-Histories of Patients. C. Frimodt-Möller.—p. 201.
Some Observations on Chrysotherapy in Pulmonary Tuberculosis. J. C. Banerjea.—p. 205.
Analysis of Artificial Pneumothorax Treatment in 1,039 Patients. C. Frimodt-Möller and M. C. Verghese.—p. 208.
*Thoracoscopic Examination and Cauterization of Adhesions. P. V. Benjamin.—p. 212.
Applicability of Phrenic Evulsion in Pulmonary Tuberculosis at the Outpatients' Department of a City Hospital. A. C. Ukil, P. Chatterjee and K. N. De.—p. 215.
Oleothorax in Treatment of Pleuropulmonary Tuberculosis. A. C. Ukil and K. N. De.—p. 221.
Thoracoplasty in Pulmonary and Pleural Tuberculosis. P. V. Benjamin.—p. 227.
Treatment of Cervical Glandular Tuberculosis. F. M. Collins.—p. 230.
Oxygenation of Peritoneal Cavity in Treatment of Tuberculosis of Abdomen. N. Bordia and J. R. J. Tyrrell.—p. 233.
Intrapleural Pressure: Interpretation of Manometric Readings in Therapeutic Artificial Pneumothorax. T. J. Joseph.—p. 237.
Treatment of Tuberculous Hemoptysis by Subcutaneous Emphysema. U. P. Basu.—p. 241.
Pulmonary Tuberculosis and Kala-Azar: Fatal Combination. L. E. Napier.—p. 242.
Hydatid Cyst of Lung, with Postoperative Tuberculous Involvement: Case. A. C. Ukil and S. K. Ganguli.—p. 244.

Thoracoscopic Examination and Cauterization of Adhesions.—Benjamin believes that every patient treated by artificial pneumothorax for whom x-ray examination after the first six or eight weeks shows that the lung is collapsing imperfectly is a potential subject for thoracoscopy and cauterization of adhesions. The presence of adhesions alone is not always an indication for operation. Some adhesions do not prevent a satisfactory collapse. Whether a collapse is satisfactory or not can be judged by the effect of the pneumothorax on the clinical symptoms, such as temperature, cough, the quantity of sputum and the presence of bacilli, and also by the changes in the blood. In some cases, although the patient improves under treatment by pneumothorax in spite of the presence of adhesions, cauterization may have to be done eventually if the adhesion shows a tendency to pull out the lung too early. There must be sufficient pneumothorax space for the manipulation of the instrument. If effusion is present, the fluid has to be aspirated before cauterization. A recent acute onset of effusion is a definite contraindication, and thoracoscopic examination should be postponed until the acute stage is over, as manipulation inside the pleura at this stage is likely to cause severe reactions. In only ten of forty patients could all the adhesions be cauterized. Collapse of the lung was increased in these ten after the operation; five patients were much improved and two improved. Tubercle bacilli were present in the sputum of the ten at the time of the operation and disappeared after the operation from the sputum of six. In the remaining thirty patients, all the adhesions that were seen could not be cauterized, but one or more adhesions were cauterized in every case. As a result of the operation, the collapse of the lung was increased in all. Twelve patients were much improved and nine improved, making a total of twenty-one, or 70 per cent, positive results. Tubercle bacilli were present in the sputum of the thirty patients in this group at the time of the operation, and they disappeared from the sputum of fourteen, or 46.7 per cent, after the operation.

Journal of Pathology and Bacteriology, Edinburgh

44: 517-720 (May) 1937

Rhabdomyoma and Myoblastoma. D. F. Cappell and G. L. Montgomery.—p. 517.
Experimental Cirrhosis of Liver Produced by Intravenous Injection of Sterile Suspensions of Silicious Dust. F. W. Simson.—p. 549.
Distribution of Influenza Virus in Experimentally Infected Mice. A. A. Smorodintseff and S. M. Ostrovskaya.—p. 559.
Observations on Pseudomonas Pyocyanea. B. R. Sandiford.—p. 567.
Comparison of Value of Heat-Killed Vaccines and Toxoid as Immunizing Agents Against Experimental Staphylococcic Infection in Rabbit. A. W. Downie.—p. 573.
*Hay Fever: (I) Effect of Pollen Therapy on Skin Reactions: (II) Reaction Inhibiting Substance in Serum of Treated Patients. D. Harley.—p. 589.
Precipitation Reactions of Normal Serum and Lipoid Suspensions. T. J. Mackie and C. G. Anderson.—p. 603.
Adrenal Changes Associated with Estrin Administration and Mammary Cancer. W. Cramer and E. S. Horning.—p. 633.
Experiments on "Dissociation" of Allergic Hypersensitiveness and Immunity. W. Pagel.—p. 643.
Syringomyelia Associated with Intramedullary Tumor, with Remarks on Relation of Gliosis to Tumors of Ependymal Origin: Case. L. B. Cox.—p. 661.
Origin of Acetylmethylcarbinol in Bacterial Fermentation. M. M. Barritt.—p. 679.
Genetic and Antigenic Basis of Tumor Transplantation. P. A. Gorer.—p. 691.

Hay Fever.—Harley treated forty patients sensitive to grass pollen with extract of grass pollen to a final dose of 100,000 units. Prick and intradermal tests were performed before, during and after treatment. The prick and intradermal test reactions were both markedly reduced in size following this treatment. The prick test reactions showed a reduction greater than that of the intradermal reactions at the 20,000 unit dose stage of treatment. A number of commercial extracts of grass pollen were tested for skin-reactive potency and very considerable variations were found. Pollen therapy results in a decrease in size of the specific skin reactions provided a sufficient dosage of potent pollen extract is administered. A reaction-inhibiting substance makes its appearance in the serum of patients sensitive to grass pollen after treatment with grass pollen. This substance blocks or inhibits the reactions of normal skin sites to serum-pollen mixtures. The block occurs not between the skin cells and the idioceptor (allergic reagin) but between the latter and the idiotoxin (allergen). The reaction-inhibiting substance apparently acts by attaching itself to the idioceptor, so preventing idiotoxin from uniting with the idioceptor. The attachment of reaction-inhibiting substance to idioceptor does not appear to be very stable. The skin site is found to be fully reactive to pollen extract twenty-four hours later, indicating that the inhibiting substance is removed from the skin in that time.

Journal of State Medicine, London

45: 249-310 (May) 1937

The Problem of the Diphtheria Carrier. M. Mitman.—p. 249.
Laboratory Findings in Rheumatic Diseases. J. Race.—p. 258.
Bacteriophage. J. Morison.—p. 270.
Diarrhea and Vomiting of Babies. D. H. Haler.—p. 279.
*Some Notes on Microbiology of Canned Foods. O. Jones.—p. 286.
Infectious Diseases Training and Its Value. M. Pool.—p. 294.
Venereal Warts in Women. R. Schofield.—p. 300.

Microbiology of Canned Foods.—Jones intends that the term "canned food" shall include both foods hermetically sealed in the usual tinned-iron container and those similarly sealed in glass molds and bottles. The bacteria that are of special interest to the food preserving technologist are roughly grouped as follows: nonpathogenic aerobic spore forming group (which includes the subtilis, mesentericus, Cohaerens-simplex, mycoides, cereus, megatherium, round terminal spore, cylindric terminal spore and central spored groups), the coccaceae, the leukonostoc group, the anaerobic spore forming bacteria, thermophilic bacteria and the salmonella group. The coccaceae organisms are readily destroyed by heat and should not give rise to any difficulty in efficiently processed cans of food, and their presence in the food must be looked on as evidence of

insufficient heat treatment. Organisms of the leukonostoc group are the cause of spoilage in canned condensed milk. They are all facultative aerobes of low thermal death point. The high heat resistance of the spores of anaerobic spore forming bacteria, coupled with their anaerobic propensities, causes them to be more likely to survive canning treatment than organisms of nonsporing character. For this reason the time and temperature of processing, for the sake of safety, has to be based on their possible presence in foods, except in foods of high hydrogen ion concentration, such as canned pineapple. Spores of the nonpathogenic aerobic spore forming group are not especially heat resistant and therefore are of negligible concern to the food canner. Thermophilic bacteria are of great importance in the spoilage of canned foods. Generally their optimal temperature for growth is from 55 to 60 C., and as a consequence they are not only not destroyed but actually encouraged by the washing of utensils, such as trays and tables, with "hot water." Many of them possess spores of a very high heat resistance, and infected canned food may spoil in spite of being processed at temperatures calculated to remove even the troublesome spores produced by anaerobes. The salmonella group of organisms are readily destroyed by exposure for a few minutes to a temperature of 80 C., which renders their presence in canned foods extremely improbable. Their toxins are more liable to give rise to trouble, but it is doubtful whether they will withstand 100 C. for a period exceeding thirty minutes.

Journal of Tropical Medicine and Hygiene, London

40: 113-124 (May 15) 1937

X-Rays in Diagnosis of Some Tropical Diseases. A. Granger.—p. 113.
Disinfection of Fresh Vegetables Contaminated with Organisms of the Enterica Group. M. A. Gohar.—p. 115.

Lancet, London

1: 1093-1154 (May 8) 1937

Prevention of Pulmonary Tuberculosis Among Adults in England in the Past and in the Future. P. M. D. Hart.—p. 1093.
Insulin Shock Treatment of Schizophrenia. G. W. B. James, R. Freudenberg and A. T. Cannon.—p. 1101.
Treatment of Urinary Infections with Calcium Mandelate. E. Schnohr.—p. 1104.
Corneal Grafting (Keratoplasty): Report of Case. T. H. S. Tizzard.—p. 1106.

1: 1155-1210 (May 15) 1937

Observations on Malignant Disease of Thyroid Gland. A. Haas.—p. 1155.
Sulfhemoglobinemia and Methemoglobinemia Following Administration of p-Aminobenzenesulfonamide. J. P. J. Paton and J. C. Eaton.—p. 1159.
Contribution to Pathology of Rheumatoid Type of Arthritis and of Rheumatic Fever. A. G. T. Fisher.—p. 1162.
Acquired Hemolytic Jaundice with Unusual Features. E. S. Duthie.—p. 1167.

1: 1211-1262 (May 22) 1937

Bismuth-Iodoform-Paraffin Paste Method of Treatment of Acute Osteitis. J. H. Saint.—p. 1211.
Diagnosis and Treatment of Gastric and Duodenal Ulcer. D. Leys.—p. 1217.
Tuberculosis in Wild Voles. A. Q. Wells.—p. 1221.
Autoserotherapy for Drug Addiction. Margaret Vivian.—p. 1221.
Epiloia with Associated Tumors of Nail Beds. S. G. James.—p. 1223.
Nutritional Retrobulbar Neuritis Followed by Partial Optic Atrophy. D. F. Moore.—p. 1225.

Sulfhemoglobinemia and Methemoglobinemia After Sulfanilamide.—Paton and Eaton state that the administration of magnesium sulfate simultaneously with, or within two or three days preceding, the administration of sulfanilamide gives rise in most persons to sulfhemoglobinemia. The formation of sulfhemoglobin takes place very rapidly even after small doses of the drug. In the absence of sulfates large doses of the drug are well tolerated, but in a considerable proportion of persons doses of from 12 to 24 Gm. daily result in methemoglobinemia. Some patients may have an increased susceptibility to the drug. The removal of sulfhemoglobin from the blood is much slower than removal of methemoglobin. The former has been detected six weeks after administration of sulfanilamide ceased. The latter disappears in approximately twenty-four hours. Spectroscopic examination of the blood is a more delicate means of detecting sulfhemoglobinemia than clinical observation of cyanosis. Oxygen is of little value in the treatment of severe cases of sulfhemoglobinemia. If the patient's life is in danger, blood transfusion is indicated. In methemoglobinemia, oxygen appears to be of value.

Medical Journal of Australia, Sydney

1: 569-610 (April 17) 1937

*Athletics and the Heart: Electrocardiographic and Radiologic Study of Response of Healthy and Diseased Heart to Exercise. E. L. Cooper, J. O'Sullivan and E. Hughes.—p. 569.
The Life History of Cysticercus Bovis in Tissues of Ox. H. B. Penfold.—p. 579.
Retention of Urine and Use of Urethral Catheters. R. G. S. Harris.—p. 583.
Epidemic Pleurodynia. K. M. Doig.—p. 586.
Trigeminal Neuralgia and Disseminated Sclerosis: Report of Case. K. Ross.—p. 587.

Athletics and the Heart.—During 1935 and 1936 Cooper and his associates made a series of observations on the oarsmen of the Melbourne University eight, the Ormond College crew and the Scotch College crew. For purposes of comparison a number of outpatients with cardiovascular lesions at Saint Vincent's Hospital have been investigated along lines similar to those used with the oarsmen. It was found that during muscular work appreciable dilatation of the heart does not occur, and that immediately after the cessation of exercise the heart decreases in size. During exertion in the trained man the muscular and respiratory systems are working not only at a more rapid rate but also more efficiently than in the same individual in the untrained state. The effects of training, as seen in electrocardiograms, were not very great. Some of the men of the Ormond crew had electrocardiograms taken before training commenced and when they were prepared for a race. The time interval was approximately three to four months, and in this period the only striking change was an increase in the amplitude of the T wave in lead 1. There are appreciable changes in the electrocardiogram after even mild exercise of short duration, such as running up stairs or "touching toes," until the pulse rate rises above 100 per minute. In the adjustment to the increased demands of exercise the pulse rate shows a very rapid rise to the frequency required, for the particular form of exertion; also there is a rapid return toward normal, once the exercise ceases. Extreme variations in blood pressure occur during exercise. The systolic blood pressure and the pulse pressure rise very soon after exercise commences and fall immediately exercise ceases. The fall of blood pressure after exercise is often to a figure below that usual for the individual at rest. There appears to be no parallelism between the pulse rate and the body temperature. The pulse rate may return to normal, while the temperature is still markedly elevated. After prolonged strenuous exertion the blood sugar often falls to a very low figure. The nervous system, the neuromuscular junction and the muscle cell are all closely concerned with the establishment of fatigue during exertion. In no instance of an oarsman who has been rowing for a number of years has the heart been larger than normal, and in the majority the heart is smaller than the average for the height and build of the individual. To investigate the late effects of athletics, the records of 100 men rowing for Ormond College between 1885 and 1905 were investigated. Of these men twenty-four are now dead (seventeen from natural causes, seven from war injuries) and seventy-six men are alive and well. The expected mortality of men of an average age of 21 years during the years in question is 31.8. The men who rowed for Ormond therefore show a lower mortality than the males of the general population.

Medical Press and Circular, London

194: 407-444 (May 5) 1937

The "Nature" of Rheumatism. F. J. Poynton.—p. 416.
*Preventive Organization in Juvenile Rheumatism. R. Cove-Smith.—p. 419.
Rheumatism: Importance of Some Unexplained Symptoms. C. Sundell.—p. 421.
Rheumatic Heart Disease and Its Sequels. E. C. Warner.—p. 423.
Chronic Rheumatic Arthritis. H. W. Crowe.—p. 426.
Indications for Light Therapy in Rheumatic Diseases. A. Eidinow.—p. 429.
Spa Treatment of Chronic Rheumatic Diseases. F. G. Thomson.—p. 434.

Preventive Organization in Juvenile Rheumatism.—Cove-Smith remarks that in the preventive organization of rheumatism in the juvenile the plan of the London County Council consists of (1) the availability of a sufficient number of beds to provide for an average period of six months' treatment for all children showing signs of active disease, (2) the establishment of rheumatism supervisory centers for the pur-

pose of early diagnosis of doubtful cases and supervision of quiescent cases, (3) the establishment of a system of supervision of cases after discharge from rheumatism units, (4) investigation and amelioration, if necessary and possible, of the child's home environment and (5) central coordination of the various branches. During the last year the supervisory centers alone have dealt with more than 6,000 cases, while more than 2,000 applications were received from various sources for treatment by the acute units. These figures alone show the vast field covered by this scheme, which, comprehensive as it is, is still susceptible of greater expansion.

Quarterly Journal of Medicine, Oxford

6: 93-230 (April) 1937

*Treatment of Acute Rheumatic Polyarthritis with Concentrated Antiscarlatinal Serum. J. Eason and G. Carpenter.—p. 93.
Idiopathic Steatorrhea (Gee-Thaysen's Disease): Three Cases. E. Mogensen.—p. 119.
Hematopoietic Activity of Human Liver: Part II. Achrestic Anemia and Aplastic Anemia. J. F. Wilkinson, L. Klein and C. A. Ashford.—p. 143.
Observations on Site of Antagonistic Action of Posterior Pituitary Extracts on Insulin Hypoglycemia. H. Cohen and J. Libman.—p. 157.
*Observations on Skin Sensitivity in Asthmatic and Control Subjects. R. S. B. Pearson.—p. 165.
Systematized Atypical Amyloidosis with Macroglossia. F. P. Weber, S. Cade, A. W. Stott and R. J. V. Pulvertaft.—p. 181.
Achlorhydria, Anemia and Subacute Combined Degeneration in Pituitary and Gonadal Insufficiency. I. Snapper, J. Groen, D. Hunter and L. J. Witts.—p. 195.
Plasma Phosphatase in Disease: A Review. N. Morris and Olive D. Peden.—p. 211.

Acute Rheumatic Polyarthritis and Concentrated Antiscarlatinal Serum.—Eason and Carpenter assert that the principal disadvantages of salicylate therapy are a high relapse rate and the high incidence of cardiac sequels. In a series of forty-four cases of acute rheumatic polyarthritis, concentrated antiscarlatinal serum has proved itself an effective form of therapy worthy of extended trial. As compared with salicylates, the advantages of serum therapy outweigh its disadvantages. It is safe to give serum to very ill patients, even when suffering from grave carditis. The immediate effects of serum are sufficiently satisfactory to justify its wider use with a view to determining its effect on the incidence of cardiac sequels, which is the only part of the rheumatic syndrome dangerous to life. It is unlikely that the effects of antiscarlatinal serum on acute rheumatic polyarthritis are entirely specific. Similar effects are reported with nonspecific protein therapy. A brief series of controls, showing a high relapse rate, indicate the possibility of combining a nonspecific element and a specific element in concentrated antiscarlatinal serum. There is no evidence that either serum therapy or the withholding of salicylates was a contributory cause of death in the three fatal cases of the forty-four treated with antiscarlatinal serum.

Skin Sensitivity in Asthma.—Pearson believes that the knowledge of the frequency of reactions to intradermal injections of horse serum in healthy subjects is essential not only in estimating the practical value of skin tests but also in forming a true conception of the part played by the presence of sensitivity in the production of asthma and allied conditions. It was to obtain information of this kind that he carried out intradermal tests under the same conditions on a series of control subjects (342) and of asthmatic patients (293), using extracts of five substances: horse dander, chicken feathers, wheat, egg white and dilutions of pure horse serum albumin. Sensitivity to common inhalant substances occurred with considerable frequency among "control" subjects. The percentage of positive reactions and the proportion of large reactions are considerably greater among a corresponding group of asthmatic subjects. A group of persons who gave a history of having experienced some atopic condition in the past, or in whose family such a condition was reported to be present, showed a greater proportion of skin reactions than a group who gave no such history and was intermediate between these and the asthmatic group. Sensitivity to inhalant substances was found to be greatest in subjects between the ages of 15 and 30 years. This was found to be true for the asthmatic and control groups. Sensitivity to more than one extract occurred frequently in all groups, and it was exceptional to find subjects highly sensitive to one substance who failed to react in some degree to extracts of other substances.

Bulletin de l'Académie de Médecine, Paris

117: 537-574 (May 18) 1937

Exanthematous Rat Virus, Especially in Rabbits. H. Viole.—p. 543.
*Anemias of the New-Born. M. Péhu and R. Noël.—p. 548.
Selection, Immigration, Naturalization. R. Martial.—p. 554.
Extrasystole and Vagus Action on Heart. E. de Somer.—p. 565.

Anemias of the New-Born.—Péhu and Noël share the opinion of those who think that real anemia is rarely diagnosed in early infancy. Except for rare instances, the new-born infant is little exposed to general infections, septicemias or toxicoses that would have an untoward influence on his blood. As regards the behavior of the hematopoietic system, the authors distinguish between secondary and idiopathic anemias. The underlying causes leading to the impairment of the infant's blood are primarily internal and external hemorrhages from the digestive tract, the umbilicus or the adrenals. Of the infections giving rise to anemia in the new-born, first place is to be given to congenital syphilis and congenital malaria. The blood of these patients returns to an embryonic stage in which proerythroblasts and erythroblasts can be observed, but rarely megaloblasts. The composition of infantile blood may also be impaired if during pregnancy the mother has received insufficient or inadequate food, or food deficient in iron. But anemia of the mother has only seldom an untoward influence on the blood of the fetus. The so-called idiopathic anemia, appearing to be primary or congenital because no underlying cause can be found for it, was first observed by Ecklin in 1919. It must be differentiated from grave familial icterus of the new-born and from fetoplacental anasarca. This anemia makes its appearance about seven or eight days after birth. The patient is usually of a healthy disposition with normal stools and urine but with a slightly enlarged spleen and liver. The peripheral blood and that of the liver and spleen shows an abnormal quantity of erythroblasts. But to include this disease among the erythroblastoses is not yet quite well founded, especially because little information has been received from analysis of the bone marrow of these patients. It remains also to be determined whether this entire anemic syndrome is or is not the result of deficient maternal nourishment.

Écho Médical du Nord, Lille

7: 649-672 (May 16) 1937

*"Dangerous" Universal Donors. E. Balgairies and L. Christiaens.—p. 649.
Generalized Herpes with Fever. J. Minet and P. Dupire.—p. 669.

"Dangerous" Universal Donors.—Balgairies and Christiaens, following reports by American and European authors, made the observation that blood transfusions from certain universal donors (group O) may be injurious. This seems particularly true of blood rich in agglutinins. A case of hypoplastic anemia is cited in which the first transfusion of 150 cc. of group O was well tolerated, but the second from another donor of the same group was soon followed by an alarming shock. But while the first donor had a low proportion of antibodies, the blood of the second was rich in antibodies and the authors attribute the shock to the latter condition. A third transfusion of group A was well tolerated. Of 217 cases of hemolytic shock, Hesse found forty-six coming from group O, in which the receiver may or may not belong to the same group. Some are also complicated by nephropathies. But the authors are not of the opinion that capillary thromboses or emboli are the direct cause of the renal disturbances. On the basis of the works of Hesse and Filatov of Leningrad they attribute the cause to hemolysis during which the destruction of red blood corpuscles gives rise to certain depressing substances which induce spasm of the blood vessels. This results in the enlargement of the capillary network, slowing of blood circulation and lowering of blood pressure. The heart action is diminished, owing to its incomplete diastolic filling. The severity of the shock may eventuate in renal abreaction or even death. The quantity of blood transfused and the lesser or greater integrity of the reticulo-endothelial system determine the degree of hemolysis. To determine the proportion of antibodies, the authors use Schiff's centrifuge technic. Five-tenths cubic centimeter of serum is diluted in geometrical progression ($\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$ . . . $\frac{1}{4.096}$), to which is added 0.5 cc. of a 5 per cent solution of erythrocytes of standard A or B. The mixture is

stirred and then left to stand for fifteen minutes. Then it is slowly centrifugated for thirty seconds and immediately examined. In case of doubt, another reading is made half an hour later. The authors thus found a preponderance of anti-A-bodies in serums of group O, in which the "dangerous" donors are included to about 4 per cent. But it is not the proportion of agglutinins alone that constitutes the "danger." It depends likewise on the dilution and the humoral constitution of the blood given. It has therefore been advised to test universal donors and to restrict those whose plasma is particularly rich in antibodies; universal donors are contraindicated in severe anemias in which the corpuscular resistance is decidedly diminished and in cases of blood disease or renal insufficiency. But the tests in their present form are not particularly reliable, and universal donors should be reserved only for urgent cases. The best treatment of shock is the injection of homologous blood, of which a few cubic centimeters may be sufficient.

Archivio Italiano di Chirurgia, Bologna

45: 461-558 (April) 1937

Anatomy of Heart Following Experimental Retractile Collapse Therapy of Lung in Rabbits. A. Biasini.—p. 461.
Viale Reaction in Blood After Operations. L. Baccarini and M. Sartini.—p. 485.
Fractures of Vertebral Column: Late Results in Forty-Six Cases Treated at Monza Hospital. A. Ciminata and G. Andreoletti.—p. 505.
Surgery of Nephritis and Nephrosis. E. Mingazzini.—p. 533.
*Decapsulation of Kidney in Nephritis and Nephralgia. A. Ciminata.—p. 550.

Decapsulation of Kidney.—Ciminata resorted to decapsulation of the kidney in a group of eight patients suffering from nephritis or nephralgia. Pain in the kidney uncomplicated by nephritis disappeared after the operation, which caused only a temporary relief or none at all in nephritis and glomerulonephritis. The author regards decapsulation of the kidney a partial sympathectomy which induces favorable modifications of the circulation and structural conditions of the kidney with consequent improvement of the renal functions. Freeing the kidney from perirenal adhesions by decapsulation results in suppressing painful spinal stimulation to the organ, which also plays a part in stopping renal pain.

Rivista di Clinica Pediatrica, Florence

35: 385-480 (May) 1937

Constitutional Hemolytic Jaundice: Case. U. Vignolo and Frida Semah.—p. 385.
*Hypercholia in Feces in Bronchopneumonia of Infants. A. Galeotti-Flori.—p. 397.
Behavior of Fibrinogen and of Principal Factors of Hemostasis in Children Following Administration of Various Substances (Coagulants, Vitamin C and Liver Extract). A. Farioli and E. Medda.—p. 405.
Sedimentation Speed of Erythrocytes in Children with Tracheobronchial Adenopathies During Sojourn at Seashore Climate. G. Sanpaolesi.—p. 420.
Biologic Properties of Extremely Low Temperature on Food: Experimental Study. C. Cocchi.—p. 429.

Hypercholia in Feces in Bronchopneumonia of Infants.—According to Galeotti-Flori, the presence of excessive excretion of bile in the feces is a common occurrence in the course of bronchopneumonia in infants. It is so common that an early diagnosis can be established when the symptoms are still slight. The author states that alterations of the blood due to the pulmonary pathologic condition and hemolysis caused by bacterial toxins, with consequent bilirubinemia, play a part in the establishment of an increased elimination of bile. The main causal factor, however, is a reaction of the liver to circulatory, toxic and bacterial stimuli. During reaction the organ secretes more bilirubin than it does normally and eliminates bilirubin recently formed as well as that stored in the structure. The greater the enlargement of the liver, the darker the color of the feces and the greater the amount of bilirubin they contain. The amount of bilirubin in the feces has no relation to the intensity and evolution of bronchopneumonia, but it is especially related to the secretory and cholagenic reaction of the liver. The elimination of bile acids parallels that of bilirubin. The author performed daily determinations of bilirubin in the feces of twenty-nine infants suffering from bronchopneumonia. In all cases the amount of bilirubin eliminated was increased in comparison to that eliminated by infants suffering from diseases other than bronchopneumonia.

Archivio per le Scienze Mediche, Turin

63: 283-350 (April) 1937

Ammonium Metabolism: Presence and Behavior of Ammonium in Bile in Normal and Pathologic Conditions in Man. G. Oliva, M. Pescarmona and F. Quaglia.—p. 283.
Physiopathology of Ketone Bodies in Diabetes Mellitus. S. Battistini, C. Angeleri and U. Widmer.—p. 299.
*Disorders of Fat Metabolism After Splenectomy. B. Zancan.—p. 319.
Donaggio's Obstacle Phenomenon in Aviators. A. Mangiacapra.—p. 339.

Disorders of Fat Metabolism After Splenectomy.—Zancan found that experimental splenectomy in dogs induces transient disorders of the fat metabolism. Five or ten days after splenectomy the total lipids, total cholesterol and the cholesterol esters and phosphatides are increased, the neutral fats are decreased and the free cholesterol in the blood is unchanged. The disorders of the fat metabolism are attenuated twenty days after splenectomy. One month after the operation the fat metabolism is normal. The fat fractions show oscillations forty-five, sixty, seventy-five and ninety days after splenectomy, which are due to physiologic changes in the fat metabolism due to splenectomy. The body weight, the amount of total proteins in the blood and the chromocytometric values show slight variations after splenectomy which are not related to the operation. The transient disorders of the fat metabolism after splenectomy seem to be due to rupture of the equilibrium of the sympathetic nervous system with consequent increase of the liver function in its relation to the fat metabolism.

Ginecologia, Turin

3: 319-398 (May) 1937

Behavior of Bladder When Perivesical Suppuration Is Emptied into It. D. Porcaro.—p. 319.
Conservative Laparotomy at All Events in Treatment of Sterility. D. Porcaro.—p. 323.
Hydremia in Labor and in Puerperium. G. Piroli.—p. 328.
*Roentgen Diagnosis of Placenta Praevia. E. Robecchi and S. Zocchi.—p. 334.
*Roentgen Irradiations in Small Doses in Deficient Menstruation. E. Robecchi.—p. 348.
Hemorrhage from Rupture of Umbilical Vessels in Velamentous Insertion of Umbilical Cord: Cases. T. M. Caffaratto.—p. 364.
Influence of Certain Irradiations on Results of Friedman Reaction. T. M. Caffaratto and M. Bertini.—p. 393.

Roentgenologic Diagnosis of Placenta Praevia.—Robecchi and Zocchi used Ude and Urner's technic in thirty-four cases in which the presence of placenta praevia was suspected. The original technic was reported in the *American Journal of Obstetrics and Gynecology* (**29**:667 [May] 1935). The method is based on the relation between the contour of the head of the fetus, in cephalic presentation, as a landmark and the shadow of the urinary bladder, which is rendered opaque by means of the injection of a contrast medium. According to statements of the original authors, the contour of the fetal head in the lower uterine segment is continued in the shadow of the bladder in the last three months of normal pregnancy, whereas a free space caused by the placenta separates the fetal head from the shadow of the bladder in roentgenograms of cases of placenta praevia. Robecchi and Zocchi state that the method is of diagnostic value if pregnancy has evoluted beyond the seventh month. Before this time roentgenograms with the characters of those showing central placenta praevia may be obtained in normal pregnancy. The space between the contour of the fetal head and the shadow of the bladder should be more than 1 cm. in width, at least to have diagnostic significance. Separation of the cephalic and vesical shadows by a placenta praevia takes place regardless of the point of insertion of the latter at the anterior or posterior aspect of the lower uterine segment. The method has no value for the differential diagnosis of grave detachments of normally inserted placenta and for placenta praevia if the fetus is in the podalic presentation.

Roentgen Irradiations in Small Doses in Deficient Menstruation.—Robecchi states that roentgen irradiation in small doses over the ovaries in menstrual disorders is harmless. He resorted to the treatment in a group of eighteen cases. The irradiations were given with a Duoval apparatus with a tension of 170 kilowats, an intensity of 3 milliamperes, a filter of 0.5 mm. of copper and 3 mm. of aluminum and a hemivalent layer of 0.8 mm. of copper, at a skin-focal distance of 40 cm. The irradiations were superficially given on a circular field, 13 cm. in diameter, over the ovarian region. A dose of 125 or 150

roentgens fractionated in two treatments with one week's interval between the first and second irradiations were administered. In rare cases the irradiation was repeated six months later or a superficial hypophysial irradiation, of 175 roentgens, was given through two temporal fields. According to the author, the treatment gives fairly satisfactory results in primary scanty menstruation and amenorrhea. The best results are obtained in patients under the age of 25, when the disease is of recent development (less than three years) and when there are no grave organic lesions of the internal genitalia. The fear that roentgen irradiations of small doses may cause irreversible harm to the sex functions or to the fertilized egg are unjustified. The irradiations destroy the altered follicles, but cells of great vitality are ready for the fecundation process. The author's experience with the treatment dates back fifteen years. He shows the advisability of resorting to the treatment more frequently.

Policlinico, Rome

44: 225-272 (May 1) 1937. Medical Section

Hematopoietic, Antitoxic and Anti-Infectious Action of Adrenal Hormones. S. Fiorentini.—p. 225.
Acute Syndrome of Complete Transverse Section of Spinal Cord from Primary Sarcoma of Head of Pancreas in Youth: Clinical and Anatomopathologic Study. L. Jacchia.—p. 240.
*Skin Reactivity of Men to Killed Tubercle Baccilli. E. Carlinfanti.—p. 262.

Reactivity of Skin to Killed Tubercle Bacilli.—Carlinfanti made a comparative study of the reaction of the skin to killed tubercle bacilli and to old tuberculin in a group of about 100 cases, including pulmonary and other forms of tuberculosis and nontuberculous diseases. The tubercle bacillus preparation consisted of an ointment made up with tubercle bacilli, killed by heat at 158 F. An amount equivalent to the size of a pea was left in contact with the skin of the anterior aspect of one arm, whereas old tuberculin was epidermally or intracutaneously administered in the other arm. In 76 per cent of the cases the reaction of the skin to killed tubercle bacilli was positive. The reaction and its intensity for either antigen were different. Some patients with a slight reaction or no reaction at all to tuberculin reacted to killed tubercle bacilli. According to the author, the diagnostic and prognostic significance of the skin reaction to the ointment of killed tubercle bacilli is more reliable than that of old tuberculin. The dissociation of the skin reaction to the antigens shows that the allergic reactions are selective for the different antigens contained in tubercle bacilli and that patients in a condition of allergy may give negative reactions to tuberculin. The lack of a positive skin reaction to tuberculin does not rule out the existence of allergy, which may be selective in the given case. The existence of selective allergy is of importance in relation to the pathogenesis of tuberculosis.

Radiologia Medica, Milan

24: 367-458 (May) 1937

*Radiobiology and Radiothanatology. G. Paltrinieri.—p. 367.
Bases for Constructing and Managing Instruments for Stereoscopy, Following Principles of Synchronous Alternation of Function of Tubes and Vision. M. Serge.—p. 392.
Aspects and Lacunar Alterations of Cranium. L. Galifi.—p. 399.
Diverticulosis of Small Intestine. G. Bignami.—p. 422.

Radiobiology and Radiothanatology.—Paltrinieri made microscopic studies of the skin of cadavers which was previously subjected to infrapenetrating radium irradiations and soft roentgen irradiations. He concludes that the cells of cadavers react to the irradiations during the first hour after death. The reaction is active, biologic and different from the passive action of other physical or chemical agents of caustic action. The action of the irradiations, both on living and on inorganic matter, is of a physical nature. It is related to phenomena of ionization, luminescence and secondary irradiation. The phenomena, and hence the reaction, are different in living and in inorganic matter owing to the fact that the former is able to react with a cytolytic reaction to the physical stimulation from the irradiations whereas the latter is not. The radiosensitivity of the cells depends on the life of the cells and on the intensity of their metabolism. It is conditioned by the intracellular formation of radiolabile physicochemical structures in a reaction of both the cells and their metabolism to the physical stimuli. The action of the irradiations on the cells is direct (from the irradiation) and indirect through the local reaction of blood and cellular fluids in the irradiated territory. The protoplasm is just as important as the nucleus in the development of radiosensitivity. The irradiations act by stimulating groups of cells to reaction with consequent active necrobiosis of the cells themselves. The reaction is elective during the first half hour after death and does not take place one hour later. This fact can be of use in medicolegal procedures for differentiating actual from apparent death and determining the hour at which death took place in a given case. The author states that the irradiations with primary beta and gamma rays of radium have an active action on cells which survive after death.

Klinische Wochenschrift, Berlin

16: 697-728 (May 15) 1937. Partial Index

Present Status of Problem of Burns, with Especial Consideration of Therapy. P. Fasal.—p. 697.
*Influence of Venesection on Vital Capacity of Lung in Healthy Human Subjects. G. Budelmann.—p. 704.
Experiments with Quinine-Calcium on Surviving Uterus of Mouse. A. Wiessmann and Elisabeth Klippel.—p. 705.
Experimental Contribution to Question of Pemphigus. L. Fleck and F. Goldschlag.—p. 707.
Sudden Death from Heart Failure in Angina Pectoris Without Coronary Thrombosis. F. Kisch.—p. 708.
Question of Takata Reaction. F. Hahn.—p. 710.

Influence of Venesection on Vital Capacity of Lung.—Budelmann says that the vital capacity of the lung is an indirect but reliable measure for the blood perfusion of the lung. Pulmonary congestion by blood is accompanied by a reduction in the vital capacity. This is caused by an impairment of the respiratory mechanism of the lung, which in turn is the result of a pulmonary rigidity and of a corresponding increase in the intrapleural pressure. The decrease in the vital capacity is explained by a reduction in the air reserves of the lung. Not only does measurement of the vital capacity of the lung reveal a reduction in the vital capacity in case the lung is overfilled with blood, but a reduction in the blood content of the lung manifests itself in a corresponding increase in the vital capacity. It is well known, for instance, that the vital capacity increases following venesection in cases of chronic and acute pulmonary stasis and after digitalis therapy in cardiac insufficiency with pulmonary stasis. Thus it can be said that the blood perfusion and the air content of the lung show an antithetical behavior. The author further describes observations on the action of venesection on the vital capacity of the lung in healthy subjects. In healthy students and in patients without heart disease who had practiced spirometry and in whom a normal value had been computed, the vital capacity was measured following a venesection in which from 500 to 1,000 cc. of blood was withdrawn. The venesection was followed in all cases by a noticeable increase in the vital capacity, and the persons stated that their breathing was freer and deeper. But, whereas in cases with a pathologic overfilling of the lung the increase in the vital capacity corresponds to the quantity of blood that has been withdrawn, this is not always the case in healthy persons. Moreover, the increase in the vital capacity of healthy persons is observable for only a short time (about one hour) after the venesection.

16: 729-768 (May 22) 1937. Partial Index

Pulsatory Movements in Pulmonalis Region and Their Manifestation in Surface Kymogram. K. Heckmann.—p. 733.
*Surprisingly Regularly Occurring Muscular Phenomenon in Focal Infection and Its Practical Use. A. Slauck.—p. 740.
Impairment of Cardiac Vessels in Protracted Fractional Irradiation of Malignant Tumors of Upper Air and Food Passages. H. Bartsch and G. Wachner.—p. 743.
Capillary Blood for Determination of Cevitamic Acid Content of Blood: Methylene Blue Method as "Micromethod." A. Elmby and T. K. With.—p. 746.
Investigations on Cevitamic Acid Content of Serum and Vitamin C Depot in Four Cases of Clinically Manifest C Hypovitaminosis. H. Lund, H. Lieck, T. K. With and S. Clemmesen.—p. 748.

Muscular Phenomenon in Focal Infection.—After citing his earlier histologic studies on the various forms of muscular atrophy, which revealed that the disorders of connected fields of muscular fibers are the result of the impairment of the ganglion cells of the anterior horns of the spinal cord or of the cells of the motor nuclei of the cerebral nerves, Slauck directs attention to the symptom of "muscular fibrillation." He shows that in the rheumatic conditions in which toxic foci play a part the musculature of the inside of the foot and of the calves of

the legs shows fibrillation. Moreover, the muscles of the hand and those in other localizations may likewise exhibit the symptom of fibrillation. The author emphasizes that this symptom will enable the practitioner to determine whether a focal infection exists and whether there is dissemination of the toxin into the cerebrospinal fluid canal. In all cases in which muscular fibrillation is detected, the practitioner should see to it that a thorough search is made for toxic foci.

Medizinische Klinik, Berlin

33: 657-688 (May 14) 1937. Partial Index

Antagonism of Insulin and Vitamin A as Contribution to Pathogenesis of Diabetes Mellitus. M. Roller.—p. 661.
*Limitation of Carbohydrates in Treatment of Migraine. O. Porges.—p. 664.
*Practical Significance of Tuberculin Sensitivity of Skin. A. Sylla and G. Rothe.—p. 665.
Pneumonia-like Course of Pulmonary Tuberculosis in Patients with Diabetes. G. Dilijannis.—p. 668.
Prontosil in Infections of Urinary Passages. A. Weiser.—p. 674.

Limitation of Carbohydrates in Treatment of Migraine.—In studies on the dehydrating and therapeutic effects of diets with a restricted carbohydrate content, Porges observed that migraine is often favorably influenced by such a diet, just as many cases of migraine are favorably influenced by a salt-free diet. He treated a number of patients with migraine by putting them on a diet with a limited carbohydrate content. Some of the patients had been treated previously with restriction of the sodium chloride intake, without adequate success. In these cases the author added the carbohydrate limitation to the salt restriction; in other cases he at once started with limiting both the salt and the carbohydrate intake and in still others he restricted only the carbohydrate intake. The therapeutic effect was generally favorable. The best results were obtained by restricting both the salt and the carbohydrate.

Tuberculin Sensitivity of Skin.—Sylla and Rothe point out that, although the old tuberculin reaction is of definite diagnostic value in children, its reliability is still disputed in adults. For this reason they decided to investigate the diagnostic value of the old tuberculin test in a large number of nontuberculous and tuberculous adults. Because exact dosage is possible in the intracutaneous test, the authors employed the Mendel-Mantoux test rather than any of the cutaneous tests. They used Koch's old tuberculin in solutions of 1:10,000 and 1:100,000. These solutions were made with distilled water rather than with physiologic solution of sodium chloride. The tuberculin tests were made on 1,516 patients. Of these, 908 were free from tuberculosis and 608 had tuberculosis. It was found that with a tuberculin solution of 1:10,000, in a quantity of 0.1 cc., 21.8 per cent of positive reactions were obtained in the nontuberculous patients. On the other hand, 25.35 per cent of the tuberculous patients had negative reactions. If tuberculin dilutions of 1:1,000 are used in adults, there are almost 100 per cent positive reactions. If positive reactions are obtained with dilutions of 1:10,000 and higher, the sensitivity of the skin is increased. The negative outcome of the skin reaction does not permit conclusions regarding the allergic state of certain organs. The existence of tuberculosis cannot be demonstrated by means of an old tuberculin test. However, it may prove valuable for the desensitization treatment not only of tuberculosis but also of other disorders in which there exists a hypersensitivity to old tuberculin and which are of a predominantly allergic character (asthma, chronic arthritides and so on).

Münchener medizinische Wochenschrift, Munich

84: 801-840 (May 21) 1937. Partial Index

After-Examinations in Postvaccinal Encephalitis. M. Kaiser and J. Zappert.—p. 801.
Relations Between Diseases of Gallbladder and Heart. O. von Zimmermann.—p. 803.
*Surgical Treatment of Painful Calcaneal Spur: Seventy Cases. H. Spitzy.—p. 807.
Retrodeviations of Uterus. W. Weibel.—p. 808.
*Fractures of Ungual Phalanx of Fingers. A. Perschl.—p. 810.
*Importance of Tryptophan Test for Diagnosis of Tuberculous Meningitis. R. Pongratz.—p. 814.

Surgical Treatment of Painful Calcaneal Spur.—Spitzy shows that it is not merely the contact with the floor which makes the calcaneal spur painful, but particularly the traction on the plantar fascia and on the flexor digitorum brevis, which have their point of attachment at the site at which the calcaneal spur develops. In persons who have a considerable amount of excess weight, the traction at this point is especially severe and painful. The operation recommended by the author severs subcutaneously, by means of a tenotome, the fascia and muscle, which are attached at the site of the spur. Eight days after this simple operation, the patients were able to step on their foot without feeling pain. The operation was performed in seventy cases, in two of which it was a failure. In discussing these two failures, the author stresses the importance of the differential diagnosis, pointing out that merely the roentgenologic demonstration of a spur does not justify the intervention but only the painfulness of the spur, which has been demonstrated by careful local examination.

Fractures of Ungual Phalanx.—Perschl cites cases and reproduces roentgenograms which demonstrate that, in case of fracture of the ungual phalanx, it usually takes from four to six months until the part of the bone which has been torn away is again united with the terminal phalanx. The pain, however, disappears at the latest after four weeks and the working capacity likewise has been completely reestablished at this time; in fact, some hard-working persons do not interrupt their work at all in the presence of such fractures. The author directs attention to this belated union in fractures of the ungual phalanx in order to prevent the premature removal of the detached bone and to avoid unnecessarily prolonged invalidism.

Tryptophan Test in Diagnosis of Tuberculous Meningitis.—Pongratz demonstrates that the tryptophan test is of great value in the differentiation between tuberculous meningitis and all nonpurulent meningitides and encephalitides. The tryptophan test is already positive during the beginning stage and thus permits a diagnosis during the prodromal stage. Moreover, the technic is simple and requires little time, so that the practitioner can perform it.

Zeitschrift für Tuberkulose, Leipzig

77: 321-456 (May) 1937. Partial Index

Late Results After Filling of Upper Lobe. J. Beitz.—p. 333.
*Diagnosis of Diaphragmatic Paralysis After Tuberculous Changes in Children. R. W. Müller.—p. 339.
Fate of Patients Whose Pulmonary Tuberculosis Was Detected in Course of Group Examinations. K. Ermisch.—p. 353.
Decalcification Processes on Old Primary Foci. H. Brügger.—p. 363.
Pulmonary Tuberculosis in Simultaneous Extrapulmonary Tuberculosis. W. Heesen.—p. 367.
*Hepatic Function and Its Significance in Tuberculosis. I. V. Balanescu and S. Oeriu.—p. 377.

Diaphragmatic Paralysis After Tuberculous Changes.—Müller says that today diaphragmatic paralysis is usually diagnosed by means of roentgenoscopy, which reveals reduction in the motility and in the tonus of the diaphragm. The diaphragmatic hypotension usually becomes manifest in an elevation of the diaphragm, and, in case of a more severe paralysis, it is expressed in a paradoxical respiratory movement. The tuberculous processes that cause diaphragmatic paralysis are especially those of the hilus and its surroundings; that is, those which impair the phrenic nerve. However, in order to decide whether an impairment of the phrenic nerve is caused by a tuberculous process, the paralysis should develop during the process and later perhaps disappear again. To be sure, this is rarely possible and a probability diagnosis must be accepted. A paralysis of a different origin cannot be excluded if it does not disappear again. The author cites cases in which the etiologic diagnosis was impossible. He states that the incidence of typical diaphragmatic paralysis in tuberculous processes of the hilus is not definitely known but that at this clinic, at least, diaphragmatic paralysis was less frequent in these tuberculous processes than in diphtheria and poliomyelitis. However, he regards the milder forms of phrenic lesions as comparatively frequent in cases of tuberculous processes of the pulmonary hilus. He describes several cases in which appearance and disappearance of paralysis could be observed. In one child a paralysis developed twice on the same side. Successive exacerbations may also be observable in the paralytic process. In two instances, good motility of the diaphragm was observed in the presence of considerable elevation.

Hepatic Function and Tuberculosis.—After discussing the value of the galactose test in the detection of hepatic disorders, Balanescu and Oeriu describe their studies on sixty

patients and ten healthy persons. They made comparative galactose tests with Bauer's method and with one devised by themselves. They place the night urine, which has been voided at 7 a. m., into a container marked A_1. Then the patient is given a galactose solution, which is prepared by dissolving in 200 cc. of warm water a quantity of galactose equal to 0.5 Gm. for each kilogram of body weight. The patient is not permitted other food during the subsequent two hours. The urine voided during the two hours following the intake of galactose is placed in a container marked A_2. Since urine contains a number of substances that reduce potassium permanganate solution, a quantity of thirtieth normal potassium permanganate solution sufficient to effect reduction is added to the urine. In healthy persons less potassium permanganate solution is required for the urine in container A_2 than for that in container A_1; in patients with hepatic disturbances, however, more solution is required for A_2 than for A_1. The reaction can be expressed in the following manner: A_2 smaller than A_1 equals negative galactose reaction; A_2 larger than A_1 equals positive galactose reaction. A tabular report indicates that the method developed by the authors is more sensitive than the Bauer method, for it discloses even the mild and incipient forms of hepatic disorders. Moreover, it requires less time and is thus less trying for the patient, and the laboratory technic is simple. The authors studied the hepatic function of tuberculous patients, particularly, in order to detect whether gold therapy causes hepatic diseases. They found that, although gold therapy does not as a rule produce hepatic disorders, it usually exacerbates an existing hepatic disorder. They advise that the hepatic function be tested before gold therapy is begun.

Zentralblatt für Gynäkologie, Leipzig

61: 1153-1200 (May 15) 1937

Significance of Hormone Disturbances in Genesis of Mastopathia Cystica and of Epithelial Metaplasias of Cervix. L. Herold and G. Effkemann.—p. 1155.
Action of Prolonged and Increased Treatment with Estrogen on Vaginal Mucosa of Different Animals. L. Herold and G. Effkemann.—p. 1161.
Short Wave Treatment of Preeclampsia and Eclampsia. J. Emmrich.—p. 1165.
Pregnancy in Presence of Intra-Uterine Pessary: Case. Katharina Thomsen.—p. 1171.
*New Symptom for Differentiation Between Inflammatory and Noninflammatory Genital Tumors, Particularly of the Left and Retro-Uterine Side. E. Schleyer.—p. 1176.
Complement Fixation Reaction in Diagnosis of Female Gonorrhea. A. Klamartsik.—p. 1181.

Differentiation Between Genital Tumors.—Schleyer describes a number of cases which illustrate the value of rectoscopic examination in the differentiation between inflammatory and noninflammatory genital tumors. He found that, if rectoscopy reveals a proctosigmoiditis or a sigmoiditis, the tumor of the genital adnexa is generally of an inflammatory character, whereas a normal mucosa in the sigmoid indicates a noninflammatory genital tumor.

61: 1201-1264 (May 22) 1937

*Late Fatalities After Successful Implantation of Ureter into Intestine (According to Coffey). F. von Mikulicz-Radecki and C. Krauspe.—p. 1202.
Combination of Ischiobulbocavernosus-Plasty with Wide Levator-Plasty. W. Stoeckel.—p. 1224.
Absence of Left Kidney in Simultaneous Absence of Left Adnexa. H. Huber.—p. 1229.
Deformities of Urinary and Sex Organs. B. Szendi.—p. 1234.

Fatalities After Implantation of Ureter into Intestine.—Von Mikulicz-Radecki and Krauspe review the literature on the transplantation of the ureters into the large intestine according to the method of Coffey. They disagree with the authors, who regard this method as entirely without danger, for although the immediate results may be favorable, the later results often are not. They demand that, before resorting to Coffey's operation, the gynecologist should consider the following: 1. The transplantation of the ureters into the intestine results in an unphysiologic condition, which, in spite of the geniality of Coffey's technic, involves dangers for the kidneys. It does not produce an ideal condition but is only a makeshift, which should be resorted to only if all other methods of plastic reconstruction on the urethra and bladder have failed. 2. Coffey's operation is indicated chiefly in exstrophy of the bladder and in vesical carcinoma. In these conditions, Coffey's operation accomplishes favorable results and the reports about these induced the gynecologists to resort to this operation also in gynecologic disorders. However, there are fundamental differences: in exstrophy of the bladder, the kidneys are healthy and the same may be the case in vesical carcinoma, or, if not, the transplantation of the ureters is intended only for temporary relief, the ultimate prognosis of vesical carcinoma usually being unfavorable. But if the urinary incontinence is caused by vesicovaginal fistulas or by defects in the urethra, the ureters, renal pelvis and even the kidneys have usually become involved in an ascending infection which would be further promoted by the transplantation of the ureters into the intestine, even if by a special technic the infection from the intestine should be prevented. Following the description and evaluation of the different technics of Coffey's operation, the authors cite late fatalities after this operation, some of which were reported in the literature and two of which they observed.

Wiener Archiv für innere Medizin, Vienna

30: 127-300 (May 29) 1937. Partial Index

Action of Diencephalic Narcosis on Iodine Content of Blood in Exophthalmic Goiter. E. Fenz and K. Uiberrak.—p. 135.
Experimental Studies on Cardiac Action of Quinidine. E. Flaum.—p. 161.
*Leukemias with Tumor-like Growth. H. Fleischhacker and H. Seyfried.—p. 177.
Value of Electrocardiogram in Differential Diagnosis of Acute Myocardial Infarct. N. von Jagić and O. Zimmermann-Meinzingen.—p. 187.
Pathology of Angina Pectoris and of Cardiac Asthma. H. Siedek.—p. 197.
Influence of Rhythmic Activity of Liver on Blood Sugar Regulation. W. Falta and K. Uiberrak.—p. 219.
*Secretagogue Action of Extracts of Salivary Glands: Humoral Genesis of Gastric Secretion. R. Boller and W. Pilgerstorfer.—p. 231.

Leukemias with Tumor-like Growth.—Fleischhacker and Seyfried point out that some authorities still insist that leukemic disorders should be classified with the tumors, but that the greatest majority regard the leukemic metaplasias and infiltrations as essentially different from tumors. However, the literature reports cases in which tumor-like formations developed in diseases the leukemic character of which had been definitely established. In lymphomatosis, particularly in its aleukemic forms, there is a tendency to the development of tumor-like infiltrates in the skin and in the mucous membranes. In some cases these are the only symptoms, in that the typical enlargement of the spleen and lymph nodes develops later or not at all and the leukemic blood picture is entirely absent. If leukemia takes this course, it is necessary to consider in the differential diagnosis also the possibility of a lymphosarcoma. The differentiation of lymphosarcoma may encounter considerable difficulties. However, if the examination of blood and bone marrow fails to clarify the diagnosis, the puncture of the diseased lymph nodes or of the tumor may aid in the decision. In this connection the authors cite a case in which exploratory excision from the retroperitoneal and inguinal lymph nodes did not permit a differentiation between lymphogranulomatosis and lymphosarcoma, but puncture of the lymph nodes revealed the typical tumor cells. The authors further describe and discuss cases of leukemia in which tumor-like growths were observed. In the first case an operation was performed on the basis of the erroneous diagnosis of medullary carcinoma, but later the typical aspects of aleukemic lymphomatosis were observed. This case indicates that a hematologic test should be made even in apparently clear cases and it also shows that histologic examinations may produce erroneous results. In a second case the breast had been amputated on account of a rapidly growing tumor but the histologic examination revealed a lymphatic leukemic hyperplasia. In this connection the authors point out that a survey of a large hematologic material will disclose lymphomatoses which are accompanied by lymphatic-leukemic infiltration of the mammary gland. Following the discussion of several other cases, they conclude that a knowledge that leukemia may be accompanied by tumor formation is not only of scientific interest but also of importance for the correct treatment, for it is inadvisable to subject patients with leukemia to surgical interventions.

Secretagogue Action of Salivary Glands.—Boller and Pilgerstorfer say that in former studies on extracts of the salivary glands they were able to show that a secretion of gastric juice takes place following the injection of an extract from the parotid and the submandibular glands. They point

out that substances which act on the gastric secretion were detected also in other organs of the digestive tract. Comparative tests were made to determine whether the secretagogue substance of the salivary glands exerts the same action as the substances from other organs. Moreover, extracts from organs outside the digestive tract were tested for their secretagogue action. In summarizing their observations, the authors say that extracts of the salivary glands of cattle contain a substance which, when administered by way of the blood stream, stimulates the secretion of gastric juice. This substance, although exerting a histamine-like effect, is not identical with histamine but, presumably, is identical with the gastrin that was discovered by Edkins. The comparison of the extracts of the salivary glands with those of the mucosa of the stomach, the duodenum, the colon and the rectum revealed that these different extracts vary in potency. Most potent is the extract of the duodenal mucosa; then follow those of the stomach, the salivary glands, the colon and the rectum. With the exception of the liver, the organs outside the digestive tract do not contain secretagogue substances.

Finska Läkaresällskapets Handlingar, Helsingfors

80: 97-194 (Feb.) 1937

Contribution to History of Plastic Surgery in Finland: II. R. Faltin.—p. 97.
Reversible Hepatargia. R. Ehrström.—p. 127.
*Significance of Premature Delivery in Origin of Certain Cerebral Disturbances, with Especial Regard to Graver and Milder Degrees of Mental Deficiency of Exogenous Cause. T. Brander.—p. 134.
Pulmonary Endocarditis with Multiple Lung Infarcts: Case. W. Edgren.—p. 151.

Significance of Premature Delivery.—Brander says that in his material of 370 premature children 1.4 per cent have an intelligence quotient above normal, 46 per cent normal and 52.7 per cent below normal. The main factors leading to mental deficiency in premature children are the low birth weight, birth complications (in which he includes not only complications such as asphyxia and abnormality in presentation but also complications in pregnancy [eclampsia and syphilis] and grave operative interventions in connection with delivery) and hereditary psychic taints. Of his cases 230 were without birth complications and poor psychic heredity, sixty-six with birth complications, fifty-four with poor psychic heredity but not birth complications, and twenty with both. The mental development was most favorable in the first group and least favorable in the last. Among the anomalies in delivery, primary or secondary pelvic presentation is of greatest significance in the mental development of the premature, because of its relatively high frequency in premature births. Of the psychic disturbances in heredity, alcoholism is most important in this material. The author presents tables to show that in the first group of 230 cases different degrees of defective mental development are due to different degrees of the same cause—birth weight, duration of delivery, rickets and enlarged tonsils, respectively. He says that not only the primary mortality and the percentage of pronounced cerebral defects can indicate the intensity of intracranial birth traumas; the frequency of milder degrees of intellectual inferiority should also be considered. Study of the causes and prophylaxis of the less marked forms of mental defects seems to him fully as important as that directed to the gravest forms of mental deficiency, since the former undoubtedly occurs more often, and there may further be a question as to who are more detrimental for society, the mildly defective at large or the hospitalized idiots.

Hospitalstidende, Copenhagen

80: 425-452 (April 20) 1937

Focal Infection, Especially Stomatogenic: I. Origin and Development of Problem. E. Jarløv and O. Brinch.—p. 425.
Orientating Investigations on Significance of A Avitaminosis and Hyperparathyroidism in Origin of Urinary Calculi. H. K. Lassen and M. Olesen.—p. 435.
*Inflow of Duodenal Contents into Bile Ducts. C. I. Baastrup.—p. 443.

Inflow of Duodenal Contents into Bile Ducts.—Since in Baastrup's case of entrance of contrast substance into the bile ducts jaundice had appeared after passage by the rectum of a stone of the size of a hazelnut, and since the choledochus was slightly irregular, he considers it likely that the stone had passed by way of the ampulla of Vater and not through a fistula between the gallbladder and the duodenum and that an insufficiency of Oddi's sphincter had resulted. To the causes for inflow of duodenal contents into the bile ducts named by Titone he therefore adds insufficiency of Oddi's sphincter after passage of a calculus. He also says that, while he has seen only three reports of roentgenologically demonstrated air in the bile ducts, the phenomenon is not particularly rare.

80: 453-480 (April 27) 1937

*Treatment of Infections of Urinary Tract with Mandelic Acid. E. Schnohr and C. Johansen.—p. 453.
Anencephaly. S. Hansen.—p. 469.
Investigations on Distinction Ability Compared with History of Diet. J. E. Poulsen.—p. 473.

Mandelic Acid in Treatment of Urinary Tract.—In twenty-three of Schnohr and Johansen's patients with pyelitis and cystitis treated with mandelic acid, the urine became sterile in from three to thirty days. In the remaining cases administration of the drug had to be stopped, in two after two days, because of by-effects. In eight later cases described with on the whole more marked infection of the urinary tract, calcium amygdalate was given, which has the advantage of being tasteless and of causing insignificant or no dyspeptic trouble. The therapeutic effect was fully as good as that attained with sodium amygdalate.

80: 481-524 (May 4) 1937

*Surgical Treatment of Leukokeratosis of Penis. S. Hansen.—p. 481.
Pyelitis in Pregnancy. P. Freudenthal.—p. 504.
Hyperproteinemia Dependent on Albumin Fraction. J. E. Holst and J. E. Poulsen.—p. 516.
Rectal Hematoma—C Avitaminosis. S. With.—p. 521.

Surgical Treatment of Leukokeratosis of Penis.—Hansen excises all the affected tissue in healthy tissue and stresses preservation of the skin of the prepuce, sewing it to the corona of the glans, so that part of the prepuce is kept. In cases with disorder of the glans he excises the thickened parts simultaneously with extirpation of the frenulum, and in six cases he resected the outermost part of the urethra at the same time and sewed the edges to healthy tissue; he thinks that the absence of more marked bleeding is due to his not having excised radically enough to reach healthy tissue; in a man, aged 77, there was recurrence after three years. In three cases with disturbance of the glans, radical treatment was given by electrocoagulation. He finds the results of his treatment of leukokeratosis of the penis satisfactory and recommends his procedure as the normal method. The observation period has been up to eight years. Carcinoma has not developed in any case, and the patients have been freed from their discomfort almost immediately after operation. After-examination of twelve patients showed no recurrence of the keratosis with localization on the prepuce and the glans. The five after-examined cases of urethral keratosis were also without recurrence. The postoperative cicatricial changes presented in three instances were easily treated by simple dilation with a bougie. He advises against incomplete operation for phimosis, which is followed by recurrence. Twenty-four cases are described.

80: 525-560 (May 11) 1937

*Investigations on Heart Lesions Due to Blunt Force. W. Munck.—p. 525.
Sacral Extirpation of Rectal Cancer in Two Sessions. T. Eiken.—p. 538.
Pneumo-Arthroradiography of Knee Joint, Especially Technic. O. Scheibel.—p. 548.
"Osteochondritis Dissecans" with Mouse Formation in Semilunar Bone. J. Bak.—p. 556.

Heart Lesions Due to Trauma.—In twenty-two out of thirty-two persons who died up to sixteen days after trauma due to powerful blunt force, mostly in automobile accidents, Munck found changes in the heart believed to be connected with the trauma. There were grave changes, especially in the cases with direct lesion of the thorax. Scattered small hemorrhages in the myocardium predominated. On microscopic examination there were also frequently subpericardial and subendocardial bleedings seen to extend into the underlying musculature. Distention of blood vessels, in spots or more diffuse, was often seen, mainly in the small veins and in capillaries and often in the combination of dilated veins and contracted arteries. The author believes that, if certain patients had survived, these hemorrhages might have affected the heart function and later caused clinical symptoms. Nine cases are described.